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MEDICAL RESEARCHES.

I. *A Caſe of Strangulated Hernia, in which a Part of the Abdominal Viſcera was protruded into the left Cavity of the Cheſt.* By Mr. ASTLEY COOPER, *Lecturer in Surgery, and Aſſiſtant Lecturer in Anatomy, at St. Thomas's Hoſpital.*

THIS diſeaſe was diſcovered in a ſubject brought for diſſection to the Anatomical Theatre at St. Thomas's Hoſpital. Under theſe circumſtances there is often much difficulty, and not always an opportunity of connecting morbid appearances with the hiſtory of complaints. The following particulars were however collected after much inquiry, and although they do not contain ſo full an account as could be wiſh-

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ed, will yet be ſufficient to anſwer the more important purpoſes in the recital of this unuſual occurrence.

SARAH SLOMAN, aged twenty-eight, had from her childhood been afflicted with oppreſſion in breathing. As ſhe advanced in years, the leaſt hurry in exerciſe, or exertion of ſtrength, produced pain in her left ſide, a frequent cough, and very laborious reſpiration.

Theſe ſymptoms were unaccompanied with any other marks of diſeaſe, and as her appetite was good, ſhe grew fat, and to common obſervation appeared healthy, the family with whom ſhe lived ſuſpected her of indolence; and her complaints being conſidered as a pretext for the nonperformance of her duty, ſhe was forced to undertake employments of the moſt laborious kind.

This treatment ſhe ſupported with patience, although often ready to ſink under its conſequences. After any great exertion ſhe was frequently attacked with pain in the upper part of the abdomen, with vomiting,

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and a ſenſation, as ſhe expreſſed it, "of ſomething dragging to the right ſide;" which ſenſation ſhe always referred to the region of the ſtomach.

The ceſſation of theſe ſymptoms uſed to be ſudden as their acceſſion; after ſuffering ſeverely for a ſhort time, all pain and ſickneſs terminated, and allowed her to reſume her uſual employments.

To a repetition of theſe attacks ſhe became more liable as her age increaſed; and as they were alſo of longer continuance than in the early part of life, ſhe was at length rendered incapable of labouring for her ſupport.

Some days previous to her death ſhe was ſeized with the uſual ſymptoms of ſtrangulated hernia, (viz.) *frequent vomitings, coſtiveneſs*, and *pain*, the *pain* confined to the upper part of the abdomen, which was tenſe and ſore when preſſed.

As theſe ſymptoms were unaccompanied with any local ſwelling which indicated the exiſtence of hernia, they were ſuppoſed to have been produced by an inflammation of

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the inteſtines: but there were other ſymptoms, which could not be attributed to this cauſe, which occaſioned much obſcurity with reſpect to the true nature of the complaint, and ſeemed to indicate a diſeaſe in the thorax. She was unable to lie on her right ſide, had a conſtant pain in the left, a cough, and difficulty in breathing, attended with the ſame dragging ſenſation of which ſhe had formerly complained.

The ſigns of inflamed inteſtines, with the addition of a troubleſome hiccough, continued without abatement for three days, when ſhe expreſſed herſelf better in theſe reſpects; but the morbid ſymptoms in the thorax remained as violent as at firſt, and on the fourth day from their commencement ſhe expired.

DISSECTION.

When the abdomen was opened, there appeared a very unuſual diſpoſition of the viſcera.

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The ſtomach and the left lobe of the liver were thruſt from their natural ſituation, towards the right ſide.

On tracing the various convolutions of the ſmall inteſtines, they were found to retain their uſual ſituation; but lines of inflammation extended along ſuch of their ſurfaces as laid in contact. This appearance the adheſive inflammation aſſumes in its early ſtage, and it is highly probable that if the approach of death had been leſs rapid, theſe ſurfaces of the inteſtines would have been glued together by the effuſion of coagulating lymph.

When the large inteſtines were examined, the great arch of the colon, inſtead of being ſtretched from one kidney to the other, was diſcovered to have been puſhed into the left cavity of the cheſt, through an aperture in the diaphragm.

The cæcum and beginning of the colon were much diſtended with air, and appeared therefore larger than natural; but the colon on the left ſide, as it deſcended towards the rectum, was ſmaller than it is commonly found.

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A ſmall part only of the omentum could be diſcovered in the cavity of the abdomen, a conſiderable portion of it having been protruded into the cheſt, through the ſame opening by which the arch of the colon had paſſed.

The diſplacement of the ſtomach and left lobe of the liver, had ariſen from this altered poſition of the colon and omentum, which, in their preternatural courſe towards the diaphragm, occupied the ſituation of each of thoſe parts.

When the cheſt was examined, the left lung did not appear of more than one third its natural ſize, placed at the upper part of the left cavity of the thorax, and united to the pleura coſtalis by recent adheſions.

The protruded omentum and colon were found at the lower part of the left cavity of the cheſt, between the lung and the diaphragm, floating in a pint of blood-coloured ſerum. The colon in colour was darker than uſual, in texture ſofter; diſtended with fæculent matter, mixed with a brown-coloured mucus. The portion of this in-

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teſtine contained within the cheſt meaſured eleven inches.

The omentum alſo was ſlightly altered in its colour, being rather darker than natural, but in other reſpects this viſcus was not changed; it adhered firmly to the edge of the aperture, and more than half of its ſubſtance was contained within the cheſt.

The opening through which theſe viſcera had protruded, was placed in the muſcular part of the diaphragm, three inches from the œſophagus; it was of a circular figure, and two inches in diameter; its edge was ſmooth, but thicker than the other parts of the muſcle.

The peritoneum terminated abruptly at the edge of this aperture; ſo that the protruding parts were not contained in a ſac, as in caſes of common hernia, but floated looſely and without covering in the cavity of the cheſt; of which they occupied ſo large a ſpace, as to occaſion conſiderable preſſure on the left lung, and to produce the diminution I have before remarked. The

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right ſide of the cheſt, and the right lung, were free from diſeaſe, and the heart was in a ſound ſtate. Plate I.

When the ſize of the opening, and the importance of the diaphragm, as an agent in reſpiration, are conſidered, it ſeems ſingular that this diſeaſe had not proved fatal at an earlier age; but it is probable that the aperture was originally ſmall, and had been gradually enlarged by the protruſion of the abdominal viſcera.

Before it became thus dilated, it was probably cloſed in common inſpiration by preſſure from ſome abdominal viſcus, moſt probably by the omentum, as this part adhered firmly to its edge. But under the deeper inſpirations conſequent upon extraordinary exertions, the abdominal viſcera, inſtead of ſimply covering the orifice, were forced into it, and then becoming compreſſed by its edge, ſlight ſymptoms of ſtrangulation ſucceeded: hence the ſickneſs, pain, and the dragging ſenſation of which ſhe ſo frequently complained. The ſituation of the aperture however fa-

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voured the deſcent, and conſequently the return of the protruded parts into the abdomen; the ſymptoms therefore, although they ſo frequently recurred, remained only for a ſhort time, and then ſuddenly diſappeared.

By theſe frequent protruſions the opening became gradually enlarged, by which ſhe was rendered more liable to ſubſequent attacks of pain and ſickneſs, becauſe the viſcera entered the cheſt with greater eaſe, and in larger quantities. At length a large proportion of the omentum and inteſtines were forced through the opening; their bulk prevented their return, and the preſſure of the edge of the opening checked the blood in its courſe through the meſenteric veins, which not only occaſioned inflammation in the protruded inteſtine, and all the common ſymptoms of ſtrangulated hernia; but alſo, by preſſure on the lung, produced oppreſſion in breathing, pain in the left ſide, and a difficulty in lying on the right.

This diſeaſe may be known in the living ſubject, by the combination of ſymptoms of

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ſtrangulated hernia, with thoſe of an inflammation in the cheſt; viz. vomiting, coſtiveneſs, hiccough, pain and tenſion of the abdomen, together with cough, oppreſſed breathing, and an inability to lie on one ſide, occurring in a perſon only a few hours before in perfect health.

From a review of the nature and ſituation of this diſeaſe, it would appear that in any future caſe the erect poſture will be found the moſt favourable to the return of the protruded parts into the cavity of the abdomen, and the warm bath, with the other remedies commonly uſed, will of courſe be equally proper in this as in other caſes of ſtrangulated hernia. The frequent recoveries which this woman experienced from violent and dangerous ſymptoms, ſhew clearly the propriety of ſuch attempts, and render it highly probable that their iſſue will be ſucceſsful.

When the hernia is reduced, it need ſcarcely be remarked, that the patient ſhould guard againſt a relapſe, by avoiding all extraordinary exertion.

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We are naturally led to inquire how this aperture of the diaphragm was at firſt produced, whether by laceration, or original malconformation.

Of laceration of this muſcle giving riſe to a protruſion of a part of the abdominal viſcera into the cheſt, an inſtance is related in the Journal De Chirurgie of Mr. Deſſault *. A man aged thirty-nine years, fell from a conſiderable height, and his life was for a long time in danger; but at the end of ſix months he was able to return to his uſual occupation, that of a carpenter, although he ſtill complained of pain in his left ſide, of a dry and frequent cough, and of great oppreſſion in breathing. About four years after the firſt, he had a ſecond fall, from the height of twenty feet; ſeven of his left ribs were broken, and he died on the third evening from the accident.

When the body was examined, two lacerations were found in the left ſide of the diaphragm; through one of theſe, which appeared to have exiſted for ſome time, the

* Vol. iii. page 6.

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ſtomach and arch of the colon had protruded into the cheſt; and by the other, which bore evident marks of its being recent, a portion of the colon had paſſed into that cavity: the left lung was much diminiſhed, and the heart was thruſt to the right ſide.

But although laceration, by this relation, is proved poſſible, yet it ſeems more probable, that in the woman, whoſe caſe I have deſcribed, there exiſted an original malconformation of the diaphragm. As proofs of this opinion, we may ſtate the very early age at which the ſymptoms were firſt obſerved; they being evident when ſhe was yet in arms! Laceration muſt alſo have been the conſequence of violence; but a perſon who had known this woman from her infancy, could recollect no fall, or other accident, by which ſuch an effect could have been produced. A lacerated opening is generally irregular; this was ſmooth, and circular! And further, if laceration had been the cauſe, the abdominal viſcera, which were placed near the opening, would

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have been found adhering to its edge, from the violent inflammation which muſt have enſued.

Morgagni relates ſome inſtances, from Bartholin and others, of a part of the abdominal viſcera being found in the cavity of the cheſt, without any preceding violence*; and farther, that ſuch a defective ſtate of the diaphragm does ſometimes occur, is proved by two preparations of infants in the anatomical collection at St. Thomas's Hoſpital. In one of theſe it has an opening ſufficiently large to permit the paſſage of the ſmall inteſtines into the cavity of the cheſt; and in the other, although the muſcle is leſs defective, a conſiderable part of the ſtomach was protruded.

In each preparation the malconformation appears in the left muſcular part of the diaphragm, it therefore follows that the abdominal viſcera had protruded into the left cavity of the cheſt.

As the lungs perform no neceſſary part of the fœtal economy, whilſt theſe children

* De cauſis et ſedibus morborum. Book iv. chap. 54. article 11.

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remained in utero, the imperfect ſtate of the diaphragm could not interfere with the functions eſſential to life; but when reſpiration began, from the great ſize of the opening, the abdominal viſcera were readily admitted into the cheſt, the lungs became compreſſed, and death was almoſt the immediate conſequence *.

Since writing the above, I have received from Mr. Bowles, an ingenious ſurgeon at Briſtol, the following account of the diſſection of a man, in whom a protruſion was diſcovered of a part of the abdominal viſcera into the cavity of the cheſt. It differs from the foregoing caſe, in the diſeaſe being placed on the right, inſtead of the left ſide; in the contents being free from ſtrangulation, and in having been encloſed in a ſac, inſtead of floating looſely in the cavity of the thorax.

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* In the Medical Obſervations and Inquiries, vol. i. page 26, an account is given, by Dr. Macauley, of a ſimilar malconformation of the diaphragm of a fœtus.

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In the month of October, 1796, I opened the body of a man aged fifty years, who had died from exceſſive vomiting after the uſe of an emetic, in whom the viſcera of the cavity of the abdomen were found diſpoſed in an unuſual manner. Of the omentum, only a ſmall part could be ſeen; and the right extremity of the ſtomach, as well as the arch of the colon, had entirely diſappeared.

On inſpecting the thorax, a ſac conſiderably larger than a tennis ball was found in its right cavity, which contained the right extremity of the ſtomach, and beginning of the duodenum, a part of the omentum, and the arch of the colon, which laſt was diſpoſed in ſeveral convolutions.

The ſac was formed of the united membranes of the pleura and peritoneum, and its orifice was placed at a ſmall diſtance from the right ſide of the enſiform cartilage, where there appeared a deficiency of fibres in the larger muſcle of the diaphragm correſponding to the ſize of the mouth of the ſac.

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The parts which formed this hernia exhibited no marks of inflammation, were free from adheſion either to each other, or to the ſac, and could be returned without difficulty into the cavity of the abdomen.

The right lung was much ſmaller than uſual, its anterior and inferior part having been compreſſed by the tumour. The other thoracic viſcera appeared to be in a healthy ſtate.

The ſtomach being next examined, was found to contain a number of peas which he had taken in ſome ſoup juſt previous to his death; and a dark coloured mucus adhered to its inner ſurface, which, when removed, exhibited the internal membrane of the left extremity highly inflamed; an appearance which had probably ariſen from the violent operation of the emetic, and appeared to be the immediate cauſe of diſſolution.

I could learn nothing important of this man's hiſtory, but that he had at various times laboured under aſthmatic complaints, which admit of an eaſy explanation from the appearances on diſſection. No violence

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could be traced capable of producing ſo great a change of ſtructure, and it ſeems therefore probable that it had ariſen from original malconformation.

F. C. BOWLES.

Queen Square,
Briſtol.

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The Cavity of the Abdomen and the left Cavity of the Cheſt laid open.

A. The diaphragm.

B. The omentum.

C. The colon.

D. The left lung forced to the upper part of the cheſt by the protruding viſcera.

E. The heart.

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II. *A Caſe of Tic Douloureux, or painful Affection of the Face, ſucceſsfully treated by a Diviſion of the affected Nerve.* *By* JOHN HAIGHTON, M. D. *Phyſician to the Eaſtern Diſpenſary, and Lecturer on Phyſiology and Midwifery, Guy's Hoſpital.*

THE complaint which has induced me to communicate the following obſervations, is of a nature that cannot fail to excite our ſympathy, whether we conſider its duration, the intenſity of its pain, or the inefficacy of the attempts uſually made for its relief. Candour obliges us to acknowledge that it does not challenge our attention from the great frequency of its occurrence, or the rapid fatality which attends its attack. But if, to elucidate, on anatomical principles, a complaint not generally underſtood, and one that has been involved in more than original darkneſs by the writings of a late celebrated phyſician; or if, to put an end to the agonizing pain of only a ſmall

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part of mankind, be objects of regard either to the medical philosopher or humane practitioner, they will supersede the necessity of any apology for presenting the following narrative to the notice of the reader.

Mrs. H——, of Stockwell, Surry, aged seventy-four, a mother of children, of a spare habit, placid disposition, and for her age much disposed to activity, was about thirteen years ago, for the first time, seized with pain of the face. This pain at its commencement was very moderate, but in its progress became violent; at length it acquired a degree of acuteness which neither words can describe, nor the imagination easily conceive.

The seat of this extreme pain was somewhat limited; being confined to the ala nasi and a small portion of the upper lip, on the right side. The pain was not of the continued obtuse kind, like that of chronic rheumatism; but, on the contrary, rather transient, exceedingly acute and lancinating during its attack. The periods of its recurrence were indefinite, and in the inter-

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vals of which ſhe was generally in a ſtate of perfect eaſe. There was a ſtriking uniformity both in the origin and direction of the pain: it always began in the ala naſi and upper lip, and darted upwards towards the orbit; but when the attack was more than commonly violent, then indeed it extended to other parts, and a ſenſation of a ſimilar kind, though much leſs in degree, was frequently perceived along the cheek towards the ear; the ſame ſenſation was alſo obſerved on the fleſhy and bony palate, on the gums and teeth of the upper jaw, and ſometimes on the fauces. She ſeemed particularly diſpoſed to this pain in ſevere, or windy weather: yet ſhe was not altogether free from it even in the mildeſt ſeaſon. It was moſt frequently excited by the more obvious occaſional cauſes, ſuch as ſpeaking, coughing, taking food, blowing the noſe, &c. though ſometimes it would return from cauſes leſs apparent. The duration of each pain ſeldom exceeded half a minute; but more frequently it was ſomewhat leſs.

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Sometimes ſhe had not more than five or ſix of theſe pains in the ſpace of a day; at others, nearly twice that number in an hour. They varied ſenſibly in their degree of violence; ſometimes ſo moderate as only to ſuſpend the movement of the upper lip, but more commonly ſo pungent as to extort ſcreams expreſſive of intenſe agony. Beſides the ſuſpenſion of the motion of the lips, a very oppoſite effect frequently took place, viz. a tremulous movement, during which it was ſometimes drawn a little upward. Notwithſtanding there were ſuch intenſe pains, neither ſwelling nor diſcoloration could be perceived, except ſuch as were occaſioned from time to time by external applications. Theſe were the general ſymptoms.

My patient was in the north of England when ſhe was firſt attacked with this complaint; and, having availed herſelf of ſuch aſſiſtance as was at hand without relief, ſhe conſulted me by letter. As the caſe was drawn up by herſelf, though not without ſome appearance of accuracy, yet I did not

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conceive her ſtatement of facts ſufficiently perſpicuous whereon to found an opinion. I therefore deſired the caſe might be written out by ſome practitioner; but my patient, imagining herſelf as capable of deſcribing her own feelings as any other perſon, ſent me another account, ſomewhat more correct than the former.

From this ſtatement I began to ſuſpect the complaint to be of the nervous kind; but at the ſame time conſidered it only in the vague ſenſe in which we are too apt to uſe that term.

That practitioner muſt have been either very fortunate, or his practice very circumſcribed, who has not, in various inſtances, experienced the inefficacy of medicine in this claſs of diſeaſes. However, the extreme agony in the preſent caſe made it highly expedient to attempt ſomething for relief; and deſpairing to obtain a permanent advantage from the uſe of any thing which then occurred to me, I recommended, for the preſent, an attention only to the urgency of ſymptoms by the appli-

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cation of the Linimentum ammoniæ, of ſuch a ſtrength and ſuch frequency of repetition as might produce the ordinary effects of rubefacient remedies; or, on the inefficacy of this, the exhibition of tincture of opium both internally and externally: likewiſe electricity in ſuch forms as the patient could beſt bear.

In caſe the above plan had moderated the violence of the attack, I had it in reſerve to recommend a free uſe of bark and chalybeates, aided by wine, and a more nutritive diet than ſhe had been accuſtomed to, with a view to ſtrengthen the conſtitution, and, if poſſible, to defend it againſt future attacks; but I unfortunately had to deal with a patient ſomewhat unmanageable in this reſpect, being very adverſe to good living.

Some time after this, I was informed there had been an evident amendment, but in a way that ſeemed to imply a ſpontaneous termination of the diſeaſe, rather than an abatement of ſymptoms from the powers of medicine: for I was told that the

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advantage obtained from the local applications was ſo very equivocal, that the amendment was attributed more to the mild turn the ſeaſon took at that time, than to the medical treatment which had been adopted.

I heard very little more of this caſe for the ſpace of two years, at the expiration of which ſhe came to reſide in the vicinity of London. From her account, it ſeems that ſhe had had ſeveral returns of her complaint, but none ſo violent as the firſt attack.

A few months after her arrival ſhe had a ſlight return. I placed her upon an inſulated chair, and drew ſeveral very ſtrong electrical ſparks from the part, by means of a very powerful machine. It produced a redneſs, together with a ſlight veſication, and moderated the pain for ſeveral days. After that time I frequently was able to reſtrain its violence by the ſame means: but at length it returned with a degree of violence unknown in any former attack; and, upon trying electricity in the form of

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ſparks, as before, it was ſo far from procuring a remiſſion of ſymptoms, that it ſeemed to aggravate rather than appeaſe. Under ſuch extreme irritation I ceaſed to draw ſparks; but conſidering that ſome little advantage had been gained by electricity on a former trial, I uſed it in a milder form, viz. in what has been called the *aura*, which differs from the former mode in being drawn off ſilently, by means of a pointed conductor: but no viſible effect enſued.

It was only at this period that I began to form what I conceive to be a juſt idea of the diſeaſe. The following circumſtance gave riſe to it.

While my patient was endeavouring to deſcribe her feelings, which ſhe attempted in a very inarticulate manner, ſhe ſtopped ſuddenly, and, upon looking at the part affected, I perceived a tremulous motion of the upper lip, by which it was drawn upwards preciſely at that part where the *muſculus levator labii ſuperioris proprius* is inſerted; and from recollecting a well known fact, that a nerve, under irritation from ſti-

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mulating cauſes, produces motion in the muſcular parts to which it is diſtributed, it immediately occurred to me that the ſuborbitar branches of the fifth pair of nerves, which are known to ſupply theſe parts, muſt be the ſeat of the preſent diſeaſe.

In order, therefore, to reduce (as far as poſſible) to certainty, what hitherto was only matter of ſurmiſe, I waited for the next exacerbation, which took place in a few minutes, and by making, at this time, rather a forcible preſſure upon the integuments covering the ſuborbitar foramen, the pain inſtantly abated. I repeated this ſeveral times, and uniformly with the ſame effect.

As my conjecture relative to the ſeat of this diſeaſe ſeemed to gain conſiderable ſupport from this experiment, I thought it eſſential to take a more minute ſurvey of the ſymptoms, particularly as being ſeated in thoſe parts which ſeemed affected in a ſecondary or ſympathetic way.

Now it appears from the hiſtory of this caſe, that the extreme pain was ſeated in

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the *ala naſi* and upper lip, on the right ſide; but when it darted with more than common violence, it affected other parts, as the ear, by extending itſelf along the courſe of the cheek, by means of communicating branches belonging to the *portio dura* of the ſeventh pair, which pair begin to ſpread on the ſide of the face as ſoon as it emerges from behind the condyles of the lower jaw. It attacked alſo the palate, gums, and teeth of the upper jaw, but no part of the lower; ſometimes the fauces; but the part which ſeemed affected next in degree to the original ſeat, was immediately behind the *dentes inciſivi*.

From comparing this aſſemblage of ſymptoms with the diſtribution of the ſecond or ſuperior maxillary portion of the fifth pair of nerves, I was ſtruck with the coincidence, and at the ſame time was perſuaded, as has been already hinted, that the original diſeaſe was in thoſe branches of the nerve tranſmitted by the ſuborbitar foramen, and diſtributed to the ala naſi and upper lip; and that the darting pains extending to the

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teeth, inſide of the gums and palate, aroſe from communicating filaments between the ſuborbitar and palatine branches. Theſe communications not only complicated the caſe, but alſo placed the proſpect of a cure at a great diſtance, from the various channels by which the pain could be conveyed from the part primarily affected to the Senſorium. But as a temporary advantage had been frequently gained by preſſure of the ſuborbitar nerves againſt the bone, the entire diviſion of them ſeemed eligible; and it was propoſed to my patient as an ultimate expedient. The propoſal, however, carried with it ſome difficulties. It was new to her. It could not inſure ſucceſs. Experience, as far as my knowledge extended, had yet to ſtamp it with its ſanction. And in this diſtraction of circumſtances, the mind of my patient might have remained ſuſpended in doubt, had not the inſupportable urgency of pain compelled her to aſſent.

Having gained permiſſion to operate, I began to conſider the circumſtances of this

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nerve more attentively; and as the intention was to effect a complete diviſion of its filaments, by an inciſion of a moderate length, the means conducive to that end became important ſubjects of regard. It was eſſential therefore to acquire a knowledge concerning the preciſe ſeat of the diſtribution of this branch of the fifth pair of nerves; the mode of its tranſition and exit from the ſuborbitar foramen; together with a clear and correct idea reſpecting the ſeat of the foramen itſelf. Beſides which, it was not altogether extraneous to attend to ſuch contiguous parts as might, either from neceſſity or accident, be wounded in the operation.

This nerve is tranſmitted by the ſuborbitar foramen, in a way very different from that which the common form of expreſſion on this occaſion would lead us to imagine. We uſually ſpeak of it as one branch, under the name of ſuborbitar; but in reality it ought to be conſidered as a ſeries of branches, for it divides before its exit, and is afterwards diſtributed in a radiated man-

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ner to the circumjacent parts, viz. the *levator labii ſuperioris proprius*, the inferior part of the *orbicularis palpebrarum*, to the muſcles and integuments of the noſe and upper lip.

From this radiated diſtribution, it muſt neceſſarily happen that the branches of this nerve are ſpread over an extenſive ſurface at their termination, though contracted into a ſmall compaſs at their exit from the foramen. It was therefore conſidered a matter of importance to fix upon a proper part for the operation, in order that its branches, by lying in a ſmall ſpace, might be more conveniently divided.

In its paſſage through the ſuborbitar foramen, it is accompanied by a branch of the internal maxillary artery, which from its contiguity muſt neceſſarily be divided. Theſe are covered by the *levator labii ſuperioris proprius*, and the common integuments.

As the branches of this nerve lie cloſe to each other at the orifice of the foramen, that part ſeems the moſt convenient for

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their diviſion, becauſe an inciſion of a moderate length will generally include them all.

The next conſideration was to determine the exact ſituation of the foramen. This at firſt ſeems very eaſy, but in reality is not ſo; becauſe in different ſkulls the diſtance of it from the orbit differs conſiderably, and there does not appear any mode of determining this more probable than by attempting to form a ſtandard from the meaſurement of a conſiderable number of ſkulls.

I therefore meaſured the ſpace between the inferior edge of the orbit and the ſuperior part of the foramen in thirty ſkulls, and found the diſtance as follows.

In 2 ſkulls, $\frac{3}{16}$ of an inch.
In 16 — — $\frac{1}{4}$
In 8 — — $\frac{5}{16}$
In 3 — — $\frac{6}{16}$
In 1 — — $\frac{1}{2}$

As the diſtance in ſixteen ſkulls out of

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thirty, was $\frac{1}{4}$ of an inch, I ſhall conſider *that* the medium diſtance from the ſuperior part of the foramen; and if we allow $\frac{1}{8}$ of an inch for the breadth of the foramen, and $\frac{1}{8}$ below its inferior part, we conſider half an inch from the lower edge of the orbit a proper place for performing the operation.

Having endeavoured to eſtabliſh a rule for determining its diſtance from the orbit, it may be proper to aſcertain its ſituation with reſpect to a line drawn from the inferior part of the internal angular proceſs of the os frontis, obliquely acroſs the orbit, to the centre of the os malæ. The meaſurement of this line in thirty ſkulls did not vary more than $\frac{1}{8}$ of an inch, and it was found that a line drawn downward, perpendicular to this oblique line, at the diſtance of $\frac{7}{8}$ of an inch from the internal angle of the eye, paſſed acroſs the orifice of the ſuborbitar foramen. By this rule I was able to form a ſtandard of the ſituation of this foramen in a living ſubject. (See the plate.)

Theſe preliminary circumſtances being ſettled, the operation becomes exceedingly

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ſimple, and conſiſts in an inciſion of $\frac{1}{4}$ of an inch in length, carried obliquely* downward, the center of which muſt correſpond with the foramen, only $\frac{1}{4}$ of an inch below it. The inciſion muſt be made down to the bone, otherwiſe we cannot be certain of dividing the nerves, as they are ſituated very deep. And as there are ſome irregularities on the ſurface of the maxillary bone at this part from muſcular attachment, as well as a furrow which is ſometimes continued from the foramen downwards, a ſmall pointed knife will be preferable to any other, as it will enable the operator to divide with more certainty ſuch nervous filaments as may be ſeated in theſe depreſſions.

The facial vein frequently paſſes over the foramen, and conceals it; from which it is liable to be divided in the operation. If this really happens, or if any of the ſubor-

* Leſt the reaſon for giving a ſlight degree of obliquity to the inciſion ſhould not immediately ſtrike the reader, it may be proper to remind him of the oblique courſe which moſt of theſe nerves take in their paſſage from the foramen to the ala naſi.

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bitar branches of the internal maxillary artery ſhould bleed with freedom, a compreſs may be made with advantage, as they are ſeated near the bone.

The wound being dreſſed ſuperficially, will probably heal by the firſt intention.

In the manner juſt deſcribed I performed the operation, and the event has amply juſtified its propriety. It immediately put an end to the pain; and in a few days the inciſion healed. My patient, who has now lived nine years ſince the operation, contemplates that event, I ſcarcely need ſay, with the higheſt ſatisfaction.

It is worthy of remark, that the ſenſation and action of that ſide of the lip, though evidently diminiſhed, were not altogether loſt, as might have been predicted. The inconvenience was only temporary; we may therefore ſuppoſe a reunion of the nerves had taken place, but with this fortunate effect, that no diſpoſition to the return of the diſeaſe through the new formed part has yet appeared.

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REMARKS.

THE complaint juſt deſcribed is not in the number of thoſe which aſſail the human body with the greateſt frequency, as there are phyſicians of conſiderable practice who have never met with it; and many who have not ſeen it oftener than once or twice. Very few of thoſe to whom it has occurred have publiſhed their obſervations.

In the writings of the ancients ſcarcely any traces of it can be collected, and thoſe ſo very obſcure, that, like the ambiguous language of the oracles, they impreſs us with no definite meaning.

The firſt account we have of it, in which an intelligible deſcription is given, is in a production of modern date, and forms a part of a treatiſe on the diſeaſes of the Urethra, by Monſieur Andrè, ſurgeon of Verſailles, publiſhed in the year 1756. In this he has given ſome practical obſervations on this ſubject, under the name of *Tic Douleureux*.

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In 1768, an inaugural diſſertation was written on this diſeaſe, by Monſieur Vieillard, in which he mentions having ſeen this complaint ſeveral times at Paris. One object in his diſſertation is to inveſtigate the following queſtion, viz. *Utrum in pertinacibus capitis, facieique doloribus, aliquid prodeſſe poſſit ſectio nervorum quinti paris?* But the author denies that the operation can be performed with advantage. His concluſion, however, has not been well ſupported by the obſervations of others; for I find in the anatomical treatiſe of Monſieur Sabatior, that this operation has been performed ſometimes with ſucceſs. The inſtances he quotes are, one from Dr. de Haen, which is mentioned in his Ratio Medendi, as the Doctor's own propoſal. Another by Mr. Ritch, a Poliſh ſurgeon of high reſpectability. A third caſe occurred at Paris, ſome years before the publication of his anatomical work, in which the ſucceſs was only temporary. And I have no doubt that a courſe of reading, regulated by this particular view, would have furniſhed me with ſe-

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veral other inſtances tending to prove that this complaint was by many rightly underſtood *.

In 1776, the late Dr. Fothergill publiſhed a very minute deſcription of this complaint in the fifth vol. of the Medical Obſervations and Inquiries; and has ſtated the ſymptoms with a conſiderable degree of preciſion, ſo that any one who has read his account may very eaſily recognize the diſeaſe. But he has been leſs happy in his reaſoning on the ſubject; for in ſtating his opinion of its nature, he ſeemed inclined to think it cancerous: and was induced to form this idea of it from the following circumſtances.

He obſerves, "that in two patients who laboured under this complaint, there were

* A knowledge of theſe facts is to me only a recent acquirement: I had not the ſmalleſt ſuſpicion of them, either when I propoſed the operation, or wrote the hiſtory of the caſe: and they are mentioned here, as well from a wiſh of aſſerting to others their due meaſure of applauſe, as to give a propriety to ſome expreſſions which have been introduced in this paper.

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hard tumours in the breaſt which had occaſioned a ſuſpicion of ſcirrhus, but had never proceeded to give trouble. That theſe appearances had excited his attention, and induced him to ſuſpect that the cauſe of theſe extreme pains of the face might poſſibly be of a cancerous nature, the method of cure (which was by hemlock) and other circumſtances, ſeemed to corroborate the ſuſpicion. The ſex, the time of life, two caſes where a tendency to this was obvious, as well as the kind of pain, which was ſudden, frequent, and ſevere, and as ſuddenly remitting, were to him further confirmations."

It is not for me to decide whether the grounds on which this opinion reſts are ſufficient, without aſſigning reaſons for adopting a contrary one: I ſhall therefore ſtate ſuch reaſons as occur to me, and ſubmit the validity of them to the deciſion of the reader.

Out of ſeveral patients whom Dr. Fothergill attended with this complaint, two

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only had ſcirrhous indurations of the breaſt, or any other ſymptoms of cancer.

We might aſk, Out of the conſiderable number of patients labouring under cancer, how few of them have pains in the face, unleſs the cancer be evidently ſeated in that part? It is well known that local complaints of various kinds may attack the ſame patient, without having the leaſt affinity to each other.

Cancer manifeſts itſelf by external appearances, as induration, ulcer, &c.

This diſeaſe produces no viſible change on the organization of parts, how long ſoever its duration may have been.

Cancer is ſeldom very painful on its firſt appearance.

This complaint firſt announces itſelf by its acute lancinating pain.

In Cancer the pain is not ſubject to perfect intermiſſions.

In this diſeaſe the intermiſſions are well diſtinguiſhed, though indefinite in their duration.

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Cancer is always aggravated by even a ſimple inciſion on the part.

This affection has been cured by a ſimple inciſion in a proper place.

Beſides theſe, there is a diſtinguiſhing character which will ſeldom fail to ſtrike an anatomiſt, viz. the uniform courſe of the pain, which will generally correſpond with that of the branches of the nerves: and an intelligent patient will frequently deſcribe the dartings of pain ſo minutely, as to teach the practitioner the diſtribution of the ſeveral branches of the fifth pair, if he had not known it before.

The apparent relief obtained from the uſe of cicuta, ſtrengthens but little the idea of cancer. Perhaps this country does not furniſh one genuine inſtance of cancer cured by this remedy; and its efficacy in thoſe caſes, if it ever had any, ſeems to have been confined to a ſmall diſtrict on the continent. If we give full credit to what has been aſſerted of it by Dr. Stork, by what caprice has it happened, that in the hands of others it loſes its virtue? But as this

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queſtion has already been ſufficiently agitated by other writers, I ſhall not add to the number of conjectures.

From theſe conſiderations, I apprehend we are at liberty to conclude that cancer and this complaint are eſſentially different.

Since the publication of Dr. Fothergill's paper, two memoirs on this ſubject have appeared in the Tranſactions of the Society of Medicine of Paris; one of which is written by Monſieur Thouret; the other by Monſieur Pujol. In theſe, ſeveral caſes are collected, and ſtated with great minuteneſs. By theſe writers it has been conſidered a nervous complaint, and in one caſe they made uſe of magnetiſm, but with very equivocal ſucceſs.

From the ſymptoms by which this complaint is diſtinguiſhed, it is not difficult to decide concerning its nature.

The kind of pain is very peculiar, and the courſe of it correſponds exactly with that of the nerves. The ſecond branch of the fifth pair is perhaps more frequently affected than either the firſt or the third.

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But the portio dura of the ſeventh pair, which is diſtributed very extenſively upon the face, under the name of *pes anſerinus*, is more frequently the ſeat of this complaint than any of the branches of the fifth pair are; and this is a matter of conſiderable regret, becauſe, in ſuch caſes, neither the operation propoſed in this paper, nor any other with which I am acquainted, can avail. If, indeed, an operator, minutely verſed in the ſituation of theſe different nervous filaments, were by an effort of ſkill and addreſs to ſucceed in the undertaking, there is the higheſt probability that his patient would be relieved: but by reaſon of the manner in which this nerve ſpreads its branches, even where it is piercing the parotid gland, as well as the hazard of wounding contiguous parts, moſt prudent practitioners would decline the operation. Thus we ſee with how much more facility the mind can project, than the hand can execute.

When the ſeventh pair is affected, we can be at no loſs to know; for the pa-

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tient complains of a pain which begins in the fore part of the cheek, ſometimes as high as the forehead, and extends itſelf in the direction of the ear. In a caſe of this kind, no relief whatever can be obtained by dividing the ſecond branch of the fifth, as ſuch diviſion cannot poſſibly give any interruption to the communication between the ſenſorium and the ſeat of irritation. I find it neceſſary to notice this, from having heard of a caſe in which the practitioner, from miſconceiving my meaning, performed the operation agreeably to the mode here adviſed; but the patient was not in the leaſt relieved by it, as might naturally be expected.

Some time ago I was requeſted to attend a lady in Queen-ſquare, to conſult with a phyſician of diſtinguiſhed eminence, and high profeſſional reſponſibility, concerning the propriety of dividing the diſeaſed nerves. This lady had the complaint ſeated not only in the ſeventh pair, but likewiſe in the third branch of the fifth. Here, beſides the ſeat of the pain juſt de-

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ſcribed, one half of the tongue, and the teeth of the lower jaw on the ſame ſide, were affected; for theſe parts are ſupplied with nerves from the third branch of the fifth pair.

In this caſe it was difficult, perhaps impoſſible, to decide in which of theſe two nerves the irritation originated. It is not neceſſary that it ſhould begin in both in order to explain the ſymptoms; for it might firſt attack thoſe branches of the fifth pair which ſupply the tongue and teeth of the lower jaw, and afterwards affect the ſeventh pair by certain well known communicating branches, one of which is ſeated behind the condyle of the lower jaw; or the irritation might commence in the ſeventh pair, and the fifth might be affected by communication. In either caſe, no operation was adviſable, becauſe, firſt, it was poſſible that the irritation might be propagated to the ſenſorium in two directions; therefore the impreſſion could not be intercepted in its courſe to the brain, ſo long as either channel was entire: and ſecondly, becauſe the

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deep ſituation of the third branch of the fifth pair made that nerve altogether inacceſſible to the knife. When the firſt branch of the fifth pair is affected alone, it is relievable by an operation. In this caſe, the pain begins in the forehead and darts downward towards the orbit: for this nerve, in coming out of the cavity of the cranium, paſſes along the upper part of the orbit, where it ſends off filaments to adjacent parts, and, having paſſed through the ſuperior orbitar foramen (frequently only a notch), is diſtributed on the forehead. Here an operation is very ſimple, and conſiſts in nothing more than a diviſion of that nerve a little above the foramen. The branch of the optical artery, which accompanies it at this part, will not furniſh an hæmorrhage of any moment.

The operation then, when adviſable, will neceſſarily vary according to the ſeat of the diſeaſe.

It deſerves to be remarked, that the pain is confined to one ſide of the face; I do not recollect to have either ſeen or read an in-

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ſtance where both ſides were affected in the ſame patient.

This complaint is not prevalent in youth; it ſeldom attacks people under forty years of age; the youngeſt patient I have ſeen was ſomewhat above thirty.

Neither ſex is exempt, and the number of thoſe afflicted with it in each ſex is nearly equal.

As the fifth and ſeventh pairs of nerves, and their ramifications, are particularly diſpoſed to this complaint, it is of importance to us as practitioners to be well acquainted with the diſtribution, not only of the larger branches, but even of the minute filaments. A want of this knowledge has led ſome practitioners into miſtakes. I have ſeen a caſe where this complaint had been confounded with the toothach, in conſequence of which all the teeth of the upper jaw, on one ſide, were extracted, without the leaſt advantage. In another caſe, where Dr. Lettſom and myſelf attended, and in which moſt of the filaments of the ſecond branch of the fifth pair, and the portio dura of the

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ſeventh, were concerned, the patient was ſo firmly perſuaded of the ſeat of the diſeaſe being originally in the teeth, that ſhe ſuffered a dentiſt to extract ſix in immediate ſucceſſion, but without advantage. She had been repeatedly cautioned againſt this, but in vain.

This affection has been miſtaken for an abſceſs in the maxillary ſinus. Mr. Newell, a very reſpectable practitioner at Cheltenham, ſome years ago ſhewed me a caſe of this kind, in which ſeveral teeth had been drawn, and a perforation made into the Sinus, but nothing was diſcharged, nor was the patient relieved.

The rheumatiſm of the face is a very frequent, and a very painful diſorder; but I think not very likely to be confounded with this complaint. Their modes of attack differ eſſentially: in the rheumatiſm, the pain is of the continued, dull, obtuſe kind; in this, it attacks by acceſſions, tranſient and acute, with intervals generally of perfect eaſe. Nor can it eaſily be confounded with that periodical pain of the

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face, which, from its recurrence at a certain hour, aſſumes the character of an intermittent complaint, and is generally relieved by the bark.

Having endeavoured to diſtinguiſh this from other complaints with which it is liable to be confounded, it remains only to make one concluding remark on the caſes moſt likely to be relieved by the operation.

In the caſe related, the pain always originated in one part, from which it extended itſelf to others. Whenever this happens, we ſhould conſider, whether the nerve or nerves can be divided between the part where the pain originated, and the parts to which it afterwards extends. When this can be done, there is a probability of operating with ſucceſs: but when ſeveral parts are attacked at the ſame time, or when the pain extends in ſeveral directions, from the part primarily impreſſed, there is but little reaſon to expect advantage from an operation. Such caſes are deplorable, as no medicine hitherto tried can be de-

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pended upon. I have ſometimes combined æther with opium, and the patient has experienced a temporary relief; but I am not quite ſatisfied whether this ſhort remiſſion has been obtained from the æther, or whether the opium alone would not have been equally ſerviceable.

The free exhibition of opium alone will palliate for a time, but it is commonly attended with ſuch diſagreeable conſequences, that few patients can be prevailed upon to perſevere in its uſe; and when given in the uſual doſes, is productive of no advantage. Mercury, I am perſuaded from trial, is injurious: the irritability which it is ſo prone to increaſe in general, is very obvious here from its effects.

The cicuta, on which the late Dr. Fothergill placed great confidence, has not been ſo ſucceſsfully employed by others, as they were led to expect from ſuch high recommendation; and as no medicine of ſuperior efficacy has yet been diſcovered, on which greater dependance may be placed, the patient is in a manner left to the un-

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availing commiseration of his acquaintance.

Should any practitioner be hereafter fortunate enough to avert this calamitous condition, by the discovery of a remedy worthy of confidence, he will have a claim to the gratitude of posterity.

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Explanation of the Plate.

A. The ſuborbitar foramen.

B. The ſuborbitar branches of the fifth pair of nerves.

C. A probe, ſhewing the part where the nerves ſhould be divided.

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III. *Account of a ligamentous Union of the Tibia, after the Removal of a carious Portion of that Bone. By Mr.* RICHARD SMITH, *Surgeon of the Briſtol Infirmary. Communicated by Mr.* ASTLEY COOPER.

IN the autumn of the year 1789, a lad was admitted into the Briſtol Infirmary with an ulcer in the leg, for which he was unable to aſſign a cauſe; but ſaid that, ſome months previous to his admiſſion, he had felt great pain in the ſhin-bone, which became much inflamed, and ſoon formed an ulcer; that various ointments and poultices having been applied, without their affording him more than temporary relief, he reſolved upon conſulting the ſurgeons of the above-mentioned inſtitution.

It was evident, upon examination, that a portion of the tibia was carious, and equally ſo that it was the effect of ſcrofula.

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The diſeaſed part being circumſcribed, and not appearing to extend more than from two to three inches in length, but ſtill ſo deep as to render the proceſs of exfoliation dubious, a queſtion aroſe, whether the limb might not be ſaved by removing the diſeaſed portion of bone, producing the ſtate of compound fracture, and depending upon a depoſit of oſſific matter to ſupply the place of the carious part.

It was reſolved to make the trial. The operation, which was performed by Mr. J. P. Noble, was attended by no embarraſſing circumſtances; the diſeaſed bone was removed by the ſaw, the wound covered with lint, and the limb placed in a fracture-box. Tonic remedies and a generous diet were allowed, as ſoon as the febrile ſymptoms, neceſſarily conſequent upon the injury the ſurrounding parts had ſuſtained, permitted.

At the expiration of a month the wound, which had uniformly worn a healthy appearance, was nearly filled up by granula-

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tions, and the ſkinning proceſs advanced rapidly.

Permiſſion was now given him to walk about the ward, which he was able to perform tolerably well.

A fortnight more added ſo conſiderably to the firmneſs of the limb, and the ſtrength of the whole frame, that no doubt was entertained of oſſification having taken place in the new and uniting ſubſtance.

Affairs were thus circumſtanced, when he unfortunately ſickened of the ſmall-pox, which became confluent; and his ſyſtem, no longer able to ſtruggle with diſeaſe, ſunk under it; affording an opportunity of examining the ſtate of the parts.

The edges of the bone left by the ſaw were abſorbed, and rounded at both extremities; and on the inferior portion a bony callus was formed about three-fourths of an inch in extent.

No earthy matter was diſcoverable through the greater part of the ſpace originally occupied by the diſeaſed bone; but

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a tough though thin ligamentous band extended from the ſuperior to the inferior portion of the tibia.

The actions of the muſcles, notwithſtanding the reſiſtance made by the fibula, had approximated the divided portions of bone ſo much, that the ligamentous ſubſtance was more than an inch ſhorter than the original caries. By this proviſion, if oſſific union had taken place, the work of nature would have been conſiderably diminiſhed, as leſs bony matter became requiſite.

It is worthy obſervation, that although the union of the tibia was thus imperfect, yet the fibula afforded it ſuch ſupport as allowed the patient, at a very ſhort period from the operation, to make ſome uſe of the limb within the walls of the Infirmary.

In very extenſive caries of the tibia ſuch a practice would, I fear, be inadmiſſible; and further trials muſt decide the propriety of the operation, even in caſes ſimilar to this, ſince our patient's early death

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leaves us in ſome degree of doubt as to the probable termination of the caſe.

I wiſh it was in my power to render this account more complete; but I hope that the hint will be purſued when fair opportunities offer, and that future reſearches will add to our knowledge of the proper treatment, in a branch of ſurgery at preſent but little underſtood.

The drawings, which are of the ſame ſize as the preparations, were taken by Mr. Bowles from the parts, at preſent preſerved by me, in my late father's muſeum.

Briſtol,
Aug. 30, 1797.

RICHARD SMITH.

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FIG. I.

The diſeaſed part which was removed by the ſaw.

FIG. II.

Shews the ends of the tibia with the uniting ſubſtance.

A. The ſuperior original portion.
B. The inferior original portion.
C. The ligamentous union.
D. Small portions of bony callus.

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IV. *A Caſe of a penetrating Wound by a Bayonet paſſing through the Heart, in which the Patient ſurvived the Accident upwards of nine Hours. Communicated by* WILLIAM BABINGTON, M. D. *Aſſiſtant Phyſician to Guy's Hoſpital, by the Permiſſion of* JOHN LIND, M. D. *Senior Phyſician to his Majeſty's Royal Hoſpital at Haſlar.*

THIS caſe occurred in the year 1778, when Dr. Babington was employed at the Royal Hoſpital as an aſſiſtant ſurgeon; and the particulars were drawn up by Dr. Lind on the examination of the body after death.

HENRY THOMAS, a marine, belonging to his majeſty's ſhip Foudroyant, was received into Haſlar Hoſpital May 25th for a wound of the ſide. The officer who brought him ſaid, that he had ſlipped from the gangway, where he was placed as ſentinel, to the deck below, and had fallen upon the point of his bayonet, which had

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entered his ſide a little below the falſe ribs, nearly in a perpendicular direction, and had penetrated to its hilt, having ſuſtained the weight of his whole body. The poor man, at the time, did not feel himſelf much wounded. He drew out the bayonet without aſſiſtance, roſe, lifted his muſket, ſaid that he was not much hurt, and, as if he thought himſelf ſtill fit to continue ſentinel, walked eight or ten ſteps, then dropt down ſuddenly in a faint. On being laid in an horizontal poſture he ſoon recovered, and was brought to the hoſpital about ſeven o'clock in the evening, which was about two hours after the accident. He then made very little complaint of pain, but lay conſtantly on the ſide oppoſite to that which was wounded, was inclined to ſleep, and, when aſked a queſtion, ſpoke ſlowly, as if in great diſtreſs. The wound was in the left ſide, about two inches above the hip-bone, and penetrated into the cavity of the belly; but neither its direction nor depth could be aſcertained. He did not ſeem to have bled much; but

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was very faint, his body cold, and the pulſe ſcarcely perceptible. The circulation was ſo languid, that, though a vein was opened in both arms, no blood could be obtained. Part of the omentum had protruded through the wound, and was cut off on board, and was about a quarter of an ounce in weight. A purging glyſter was adminiſtered, and the diſcharge procured by it was nowiſe tinged with blood. He had very little thirſt, but drank freely of colt's-foot tea, and took ſeveral medicines. All drink received into his ſtomach produced ſickneſs and attempts to vomit; but nothing was brought up, except upon the patient's removal from the ſhip, when there had been a ſlight vomiting, perfectly free from any admixture of blood. The breathing, on his firſt coming into the hoſpital, was free but ſlow, ſeemingly from the general languor of the ſyſtem; by degrees it grew more oppreſſed, and at length became extremely quick and laborious, and was attended with a ſenſe of weight on the right ſide of the breaſt,

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which threatened ſuffocation. The expectoration was not bloody. Very early after the patient was received he complained of great uneaſineſs at the breaſt, and a pain at the pit of his ſtomach; which ſymptoms gradually increaſed, and by midnight roſe to ſuch a height as plainly to ſhew themſelves the immediate forerunners of death. He alſo felt a pain outwardly in the right breaſt, which diſtreſſed him much, and prevented him from uſing the right arm. The upper part of the breaſt, from the time of the accident, had ſwelled a little. This ſwelling ſpread by degrees, and became very troubleſome. At nine o'clock it had extended over the whole breaſt; at eleven it had reached the neck and face. At length every part of the body, even the remoteſt extremities, became diſtended; but the ſwelling of the neck was particularly diſtreſſing. A little after two o'clock in the morning a ſudden ſtrangulation in the throat put a period to life. The patient retained his ſenſes to the laſt. He had voided no urine from the time of

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the accident. A very ſevere oppreſſion on the breaſt, and great difficulty of breathing for above two hours, preceded his death, and a ſlight convulſion of one leg accompanied it. No other ſymptom occurred.

Twelve hours after death the body was opened. The triangular wound of the bayonet appeared on the left ſide, midway between the linea alba and back-bone, and midway between the loweſt rib and ſpine of the ilium. It was about an inch in breath, and ſo open as readily to admit the top of the finger. Part of the omentum protruded through it, and appeared mortified; a part had alſo formerly protruded, as before mentioned, and been cut off. The direction of the wound was obliquely upwards and inwards. The bayonet, after penetrating the common integuments, the abdominal muſcles, and the peritonæum, had pierced the colon nearly where it terminates in the rectum, and came out in the upper part of its arch. Eſcaping from that inteſtine, it entered the lower part of the ſtomach, about two inches from the

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pylorus, and paſſed out through the upper ſurface of it. The left lobe of the liver was there oppoſed to it, and, being wounded near the thin extremity, tranſmitted the inſtrument to the diaphragm. The diaphragm it pierced near the center, in the moſt tendinous part, and thus entered the thorax; but, from the oblique direction of the wound, it here interſected the axis of the body; and whereas in the abdomen it had injured the left ſide, it in the breaſt paſſed through the right. Immediately within the breaſt the pericardium had preſented and yielded the inſtrument a ready paſſage to the heart. The right ventricle there received it. The point was thruſt in at the lower part of the ventricle, and had forced its way out near the valve. From the heart, again paſſing the pericardium, it pierced through both the upper and middle lobes of the lungs. It had now arrived at the more ſolid confines of the thorax; but even theſe were inſufficient to detain it. It forced a paſſage on the right ſide near the ſternum, between

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the cartilages of the ſecond and third ribs, and had ſheathed its point beneath the pectoral muſcle. That muſcle was ſlightly wounded, but the integuments above it were unhurt. A little bloody ſerum was found in the cavity of the belly, but ſcarcely any pure blood. The pericardium contained a little blood. The right ſide of the breaſt contained above two quarts of blood, partly in a fluid and partly in a coagulated ſtate. A ſmall quantity of blood was alſo found in the cellular ſubſtance under the wound of the pectoral muſcle.

Notwithſtanding this extent of injury, very few of the ſymptoms occurred which uſually attend wounds of parts ſo eſſential to life.

The colon was twice pierced, and neither the ſtools were tinged with blood, nor upon diſſection were any fæces diſcovered in the cavity of the belly; although both wounds were low in the inteſtine, in a part from whence there would have been an eaſy paſſage of blood to the anus, and where the fæces are ſufficiently indurated

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to have been rendered conſpicuous, had they been diſcharged into the cavity of the belly.

The ſtomach was twice wounded, and yet there was not any vomiting, except one ſlight fit when coming on ſhore. The nauſea indeed was conſtant.

The wound of the liver was above half an inch in depth, yet ſcarcely yielded any blood.

The wound of the diaphragm, though nearly as large as that of the ſkin, produced no diſtinguiſhing ſymptom. Neither blood nor air eſcaped through it into the cavity of the abdomen, probably from its being covered by the looſened membranes of the pericardium.

The heart received two large wounds, yet its muſcular action continued regular, and the circulation was afterwards ſupported for above nine hours. The wounded ventricle, upon each contraction, threw part of the blood into the pulmonary artery, and part through the wounds into the cavity of the breaſt; reſembling, in

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ſome meaſure, the circulation of a fœtus, where each contraction ſends only part of the blood to the lungs, the reſt paſſing by an opening immediately from the right to the left ſide of the heart; with this difference, that in a fœtus all the blood is retained in circulation, whereas in this caſe that part which paſſed through the wounds was thrown out of its courſe, and every contraction diminiſhed the circulating maſs. The wounds of the heart did not produce any different effect from the wound of a blood veſſel in any diſtant part of the body; the diſcharge of blood from them was even not ſo quickly mortal as it generally proves from wounds of equal ſize in any large veſſel.

The middle and upper lobes of the lungs on the right ſide were both wounded: the wound of the middle lobe was above an inch and a half in depth, and of the upper lobe about half an inch; yet no blood was coughed up. The paſſage of the air in reſpiration from the wounded lungs into the cavity of the breaſt was productive of

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much diſtreſs. Each dilatation of the breaſt drew ſome air through the wounds into the cavity, and, during the ſubſequent contraction, the looſe texture of the lungs on collapſing acted as a valve to prevent its return. The air, thus accumulated, impeded the free motion of the lungs on that ſide of the breaſt, and at length wholly deſtroyed it. The difficulty of breathing was alſo in part owing to the quantity of blood diſcharged into the cavity from the wounds of the heart, which, when become conſiderable, might alone have been ſufficient to produce it. To the air within the cavity of the breaſt another diſtreſſing ſymptom is alſo to be aſcribed: compreſſed in expiration by the contraction of the breaſt, part of the air from the cavity was conſtantly, in breathing, forced with violence into the wound between the ribs, where, inſinuating itſelf into the cellular membrane, it produced an emphyſema. This firſt appeared upon the breaſt, but afterward extended over the whole body, the ſkin of which crackled

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under the finger like dry ſtraw. Not only air was forced through the wound, but alſo a conſiderable quantity of blood. On diſſecting, this was found depoſited between the fibres of the pectoral muſcle, and in the neighbouring cellular membrane, where it formed an ecchymoſis, much larger than the wound of the muſcle itſelf could have produced, in which neither artery nor vein, but only a few fleſhy fibres, had been wounded.

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V. *An Account of a Rupture of the Aorta near the Heart. By Mr.* LYNN, *Jun. Surgeon, at Woodbridge. Communicated by Mr.* ASTLEY COOPER.

A WOMAN, aged twenty-nine years, of a plethoric habit, but of a relaxed fibre, and who had twice miſcarried between the fifth and ſixth month, in the latter part of the year 1796, became my patient in conſequence of a third pregnancy.

Being induced, from her appearance, to conclude, that ſhe had miſcarried from too great fullneſs of habit, I uſed ſmall bleedings at different times, and exhibited the bark, until the end of the ſixth month, when all ſuſpicion of danger ceaſed.

Within a fortnight of the uſual period of delivery, no ſymptoms but thoſe common to pregnancy had occurred; when ſhe complained of pain in her ſide, and of oppreſſive ſenſations about the region of the heart.

As the uterus was very large, theſe

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ſymptoms were at firſt attributed to its mechanical preſſure; but as they afterwards became more violent, it was judged proper to take away a ſmall quantity of blood, and to exhibit tinct: opii. camph: and æther, of each between thirty and forty drops every four hours, which afforded her ſome relief.

On the 11th of April 1797 I viſited her at nine o'clock in the morning, when ſhe was free from any ſymptom of labour, and ſuffering leſs than before from the oppreſſion on the cheſt.

At eleven o'clock of the ſame day ſhe was ſuddenly ſeized with the pains of labour; but, being abſent from home, I was prevented ſeeing her until twelve. I then found the labour proceeding well, the os uteri ſufficiently dilated, to enable me to diſcover a natural preſentation, the pains returning regularly, and her ſpirits good, in the idea of having a living child; circumſtances which promiſed a ſpeedy and happy event.

After I had been in the room about half

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an hour, and immediately after a labour pain, ſhe ſtarted up in her bed, complained of a moſt ſevere though momentary pain in her heart, and ſaid ſhe was dying. Much alarmed at the incident, I quitted my poſition at the bed-ſide, and, from the ſymptoms which immediately ſucceeded, expected ſhe had only a few moments to live. An univerſal coldneſs ſpread over the body, the countenance became pale, the lips and nails livid, the viſion loſt, although the eyes remained open, and no pulſe could be felt at the wriſt. A large quantity of brandy was immediately forced into the ſtomach, and, after a few minutes, ſhe began to revive, inquired where ſhe was, complained of being heavily diſpoſed to ſleep, and of having loſt her ſight.

Suſpecting from theſe ſymptoms, that the heart was ruptured, and finding that the proceſs of labour had ceaſed from the moment of their acceſſion, it appeared better to deliver her by art than to allow of any violent efforts, which might occaſion inſtant diſſolution.

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Previous, however, to taking this ſtep, I thought it prudent to have the ſanction and preſence of ſome medical friends.

Two hours had elapſed before their arrival, and ſhe was in ſome degree recovered; but, during the greater part of this time, the action of the uterus had been ſuſpended. Slight pains were now returning, the pulſe was perceptible at the wriſt, and it ſeemed probable that nature would have completed the operation: but, as her ſtrength was much exhauſted, it was agreed to deliver her with the forceps.

On reſuming my ſituation at the bedſide, I found the os uteri much dilated, and the head ſo far advanced in the pelvis, that I ſoon applied the forceps, and delivered her of a full-ſized male-child, about three o'clock in the afternoon. The child was not alive, but appeared to have been dead only a ſhort time.

For ſome hours after delivery ſhe remained faint, the extremities cold, the lips livid, the pulſe ſmall, and ſo quick as ſcarcely to be reckoned; all her ſenſes

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perfect, except that of ſight, which was ſtill loſt.

Frequent cordials were adminiſtered during the whole of the day, and in the evening a large doſe of opium.

12th. She had paſſed a tolerable night, but at intervals complained of an oppreſſive pain in the left ſide of the cheſt. Her viſion had been imperfectly reſtored, but all other ſymptoms remained as in the evening of the 11th.

13th. The extremities were not ſo cold, or the lips ſo livid, as on the two former days. The pulſe remained very ſmall and rapid. The ſight was ſo far returned as to enable her to diſtinguiſh ſurrounding objects.

14th. Had paſſed a good night. The extremities were warmer, and the livid hue on the lips had diſappeared.

15th. So much better, in every reſpect, that I began to ſuſpect the idea of a rupture of the heart had been too haſtily formed.

16th. Her ſleep, during the night, had been broken by ſhooting pains in the cheſt;

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a large ſtimulating plaiſter was applied to the breaſt.

17th. Had paſſed a tranquil night, and is this day more free from pain in the cheſt. From this time to the

25th, her health continued gradually improving, her appetite was good, her ſtrength in a conſiderable degree reſtored; ſhe was able to ſit up many hours during the day, and ſpoke in ſpirits of her preſent ſituation. Still, however, her pulſe was ſmall and rapid, and the complaints in her cheſt made me doubtful of her recovery.

She went to bed this evening very ſleepy and fatigued, and, after about half an hour, called her nurſe, ſaying, that the pain in the heart had returned with more violence than ever, deſired ſomething to drink, but before it could be procured expired.

EXAMINATION.

On the day after her death I obtained permiſſion to open the body, and the following appearances preſented themſelves:

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When the ſternum was raiſed, the left cavity of the pleura appeared diſtended with a tranſparent fluid, in which there floated ſome clots of coagulable lymph. The left lung was not near ſo large as natural; indeed it ſeemed, that for ſome time previous to her death, little if any air had been admitted within its cells; tubercles were found in various parts, which contained a truly ſcrofulous ſecretion. The upper portion of the right lung adhered ſtrongly to the pleura.

The pericardium being next opened, its ſubſtance appeared much thicker than natural; it contained a conſiderable quantity of liquor pericardii, in which a large and looſe coagulum of blood was found. The heart appeared greatly enlarged, and clots of coagulated blood adhered to many parts of its ſurface.

As it was late in the evening when this examination was attempted, the light did not permit of a more accurate examination. I therefore removed the heart and pericardium, with a view of taking a favourable opportunity of diſcovering at what part the

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rupture was placed, by which the blood had escaped into the pericardium.

When the heart was examined on the following day, it was found, that, besides the general enlargement before mentioned, the cavities of the left auricle and ventricle were particularly dilated and distended with blood, and that the substance of those parts had acquired an uncommon share of muscularity. No laceration of the heart could be discovered.

On tracing the aorta, a rupture of it was discovered, placed about an inch from the heart, just above the margin of its valves, and opposite to the point of the appendix of the right auricle. The opening was sufficiently large to admit of the introduction of a common goose quill, when two small and tender fibres of lymph, extending across its center, were removed. At a small distance from the aperture several clots of blood adhered to the surface of the aorta and pulmonary artery, and to parts of the heart.

The internal surface of the ruptured

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veſſel was ulcerated, in a circular direction from the opening; ſo that, could the diſeaſe have proceeded, the aorta would have been entirely ſeparated from the heart. The ſemilunar valves appeared thicker than natural, and their baſes were in part ſeparated by ulceration from their uſual connexion with the aorta.

The haſte in which the inſpection of the body was obliged to be conducted, and the unfavourable time at which it was performed, prevented ſo cloſe an examination into the ſtate of the aorta at a diſtance from the heart as I wiſhed; but ſo far as I could trace it, its internal coat bore ſtrong marks of diſeaſe, being thickened, opaque, and irregular, and even ſeemed, in ſome parts, to be in a ſtate of active inflammation. Upon the whole, it appeared thinner than uſual, and its diameter larger, as it meaſured an inch and an half before immerſion in ſpirits.

The ſymptoms which preceded, as well as thoſe ſubſequent to delivery, admit of an eaſy explanation from the appearances on diſſection.

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The approaches of this diſeaſe were ſlow and inſidious. Inflammation appears to have begun on the inner ſurface of the aorta, near the heart, and, gradually extending to its outer coat, occaſioned thoſe uneaſy ſenſations in the cheſt, which appeared previous to the time of delivery.

During one of the labour pains the weakened veſſel became ruptured, and the blood eſcaped into the pericardium. The loſs of blood, though ſmall, happening ſo near to the heart, produced immediate ſyncope; but the ſtop put to circulation by the patient's fainting, gave time for the formation of a coagulum, which cloſed the aperture.

By the uſe of ſtimulating remedies the circulation became renewed, though ſtill ſo feebly, that the body never recovered its natural warmth or colour, or the pulſe its uſual volume.

The diſeaſe proceeded in proportion to the return of action; and, as the proceſs of ulceration extended, the opening became larger, the coagulum unequal to cloſe it, and a ſecond hæmorrhage occaſioned the ſudden diſſolution.

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The enlargement of the heart probably aroſe from the altered ſtate of the valves of the aorta allowing regurgitation into the left ventricle, which, becoming filled both from the aorta and auricle, contained a larger quantity of blood, and had more than its uſual office to perform.

The accumulation of water in the chest was a conſequence of the difficulty of the blood's paſſage through the heart, and is therefore generally found in thoſe who have laboured under diſeaſes of the valves.

From the firmneſs of the adheſion on the right ſide of the cheſt, there is reaſon to believe that this was not owing to any recent inflammation.

To many this relation may appear unimportant, as the diſeaſe was placed beyond the reach of remedy; but may it not be uſeful in making us cautious in prognoſis, in enlarging our ideas of the animal economy, and in pointing out, even under the moſt fatal diſeaſes, the great reſources of nature?

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A View of the Heart, which is much larger than in its healthy State.

A. The ruptured aorta.

B B B. Clots of blood and lymph adhering to the surface of the heart, aorta, and pulmonary artery.

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VI. *On the Uſe of the Tinctura Ferri Muriati in thoſe Suppreſſions of Urine which ariſe from a ſpaſmodic Affection of the Urethra.*

MR. CLINE, who firſt diſcovered the efficacy of this medicine in relieving ſpaſms of the urethra, has granted us his permiſſion to publiſh the following extract from his lectures:

"A grazier, about thirty-five years of age, had a ſtricture in the urethra during ſeveral years, for which bougies were occaſionally uſed. He was attacked with a retention of urine, which continued nearly forty-eight hours, without his obtaining any relief, although trial was made of all the uſual remedies. This attack was ſoon followed by another of the ſame kind, and the warm bath, opiate clyſters, &c. were as ineffectual as before, the urine being never evacuated until his

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ſtrength appeared almoſt exhauſted by the complaint. At other times, with the aid of bougies, he voided his urine in a favourable ſtream, and one of moderate ſize could be paſſed without difficulty: but during the ſpaſmodic ſtate of the ſtricture neither a drop of urine paſſed, nor could the ſmalleſt bougie be introduced. The return of ſpaſm of the urethra became afterwards more frequent, and each time the retention of urine laſted ſo long as to endanger the life of the patient. From the frequency of this complaint, and its ſuppoſed danger, he removed to London, and, in a few days after his arrival, was ſeized with a retention of urine as before. As the common methods of treatment had no effect in this caſe, it was at once determined to try an unuſual remedy, and a tobacco clyſter was directed. This produced languor, a cold ſweat, faintneſs, and inſenſibility; from which he recovered in about an hour, and ſoon after voided his urine without difficulty. However, in a few days he had a return of the retention, and the clyſter was

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again propoſed; but being extremely averſe to its uſe, on account of the very diſtreſſing ſymptoms which it had before produced, it was propoſed to give him ten drops of the tinctura ferri muriati every ten minutes, until it produced ſome ſenſible effect. When he had taken ſix doſes of it, *i. e.* in an hour, he had an irritation to void his urine, and it immediately flowed freely; although in every preceding attack the complaint had continued about forty-eight hours, except when the tobacco clyſter was given. He had ſeveral relapſes of the complaint, and was each time relieved by taking the above medicine in ſimilar doſes, and became ſo confident that he poſſeſſed a ſpecific for his diſorder, that he no longer felt any apprehenſion about its conſequences.

"This medicine has ſince been given in ſeveral ſimilar caſes with equal ſucceſs; but in all the complaints were purely ſpaſmodic. Retentions of urine from other cauſes cannot be affected by it."

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VII. *Three Inſtances of Obſtruction of the Thoracic Duct, with ſome Experiments, ſhewing the Effects of tying that Veſſel.* *By Mr.* ASTLEY COOPER.

THE thoracic duct is a veſſel of ſo much importance in the animal economy, from its being the medium by which the nutritious part of the food is conveyed into the blood, and the channel through which the greater number of the abſorbents empty themſelves into the veins, that it might be reaſonably expected an obliteration of its canal would produce the moſt fatal conſequences.

It will be found, however, by the following facts, that nature, with a kind regard to our preſervation, has provided ſecurity againſt this evil, ſo that a conſiderable degree of diſeaſe may exiſt in the principal trunk of the abſorbents without any perma-

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nent interruption to the progreſs of abſorption.

In the beginning of the winter of 1789, being deſirous of injecting the thoracic duct of a ſubject which I was at that time diſſecting, I fixed a tube containing quickſilver into an abſorbent on the loins; the veſſel became quickly filled, and I ſaw the injection paſs into the receptaculum chyli. The quickſilver, inſtead of proceeding along the thoracic duct, now ceaſed to flow; but by having recourſe to a higher column, whatever occaſioned the reſiſtance was overcome, the fluid paſſed about an inch, and, farther I could not force it.

Anxious to diſcover the cauſe of this failure, I immediately opened the duct, and found the following appearances.

The firſt impediment was occaſioned by two valves placed near to the receptaculum

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chyli, which were much thicker than natural, and projected into the duct, ſo that their ſuperior edges were preſſed firmly together. An inch from theſe, and higher in the duct, two other valves appeared, diſeaſed in a ſimilar manner, only in a greater degree. Theſe were alſo ſo much thickened as to fill the canal, and they formed a barrier, beyond which no fluid could paſs.

On further examination I perceived a third diſeaſe, which ſeemed to have been originally ſeated in valves, although it had proceeded ſo far as to deſtroy their regular figure, and entirely to obliterate the tube. Plate I. Fig. 1.

Beyond this laſt diſeaſe, which was placed oppoſite the curvature of the aorta, the duct appeared in a natural ſtate, and opened in its uſual manner into the veins.

The morbid changes here obſerved ſeemed to have been of a ſcrophulous kind; the valves were hollow, and contained a ſubſtance between their laminæ, having

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the ſame curd-like appearance with that commonly found in ſcrophulous abſceſſes.

There were other appearances in the body which ſerved to confirm this idea. The abſorbent glands of the neck were enlarged, and many of them imperfectly ſuppurated; and the perſon appeared to have died of phthiſis pulmonalis, the lungs being loaded with ulcerated tubercles.

As the abſorbents were found every where empty, their contents muſt have paſſed into the veins, either by collateral branches entering the duct above the diſeaſed part, or by other terminations than the two which are commonly found. However, the body had been too much diſſected to admit of any accurate examination into theſe circumſtances, and I was obliged to depend on ſome future opportunity to determine in what manner the obſtruction had been prevented from producing fatal conſequences.

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In the ſpring of 1790 Mr. Waterworth, now a ſurgeon in the Iſle of Wight, who was, at that time, attending the lectures at St. Thomas's and Guy's hoſpitals, requeſted me to aſſiſt him in making a preparation of the thoracic duct and the large veſſels which accompany it. Common coarſe injection being thrown into the duct upon the loins, it paſſed about an inch, and then ſuddenly ſtopped. A greater force being applied, the injection entered a cluſter of veſſels placed under the left crus of the diaphragm, and there the wax eſcaped from a divided abſorbent.

When quickſilver was forced into this divided veſſel, it entered a large abſorbent, which paſſed half way up the cheſt on the left ſide of the aorta, croſſed the ſpine behind that veſſel, and then terminated in the thoracic duct, which became readily filled with the injection from the part diſeaſed to that at which it opens into the vein.

Upon farther examination I found the wax had been ſtopped in the duct by a

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ſmall fungus, placed about an inch and an half from its lower extremity; and that about two inches higher another fungus, larger than the former, had rendered the tube impervious.

Between theſe parts the veſſel was open, and free from diſeaſe; but wherever abſorbents entered the duct, the valves at their terminations were thickened and opake.

The obſtruction extended no farther than oppoſite to the fifth vertebra of the back, ſo that about half the duct was ſtill capable of performing its natural functions.

The appearance of the diſeaſe proved that this complaint, as well as the former, had been of a ſcrophulous nature; conſiderable thickening, and ſome ulceration, being attended with a comparatively ſlight inflammation. The meſenteric glands were enlarged, and the peritoneum was ſtudded with ſmall tubercles, which I have ſince ſeen in ſeveral inſtances in very ſcrophulous ſubjects.

This obſtruction was prevented from

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proving fatal by anaſtamoſing abſorbents, having performed the functions of the thoracic duct. Theſe veſſels, which were ſituated on the left ſide of the ſpine, by entering the duct above the diſeaſe, and having communication with the lacteals, and other abſorbents of the loins, conveyed the chyle and lymph into the blood. The fluids were therefore only diverted into different channels, there was no permanent interruption to the progreſs of abſorption, and no material inconvenience ariſing from the obſtruction. Plate I. fig. 3.

CASE.

JOHN HAMMETT, a labouring man aged twenty-two years, was admitted into St. Thomas's hoſpital in the month of January 1795. The account which he gave was, that about five months before he had been attacked with a pain in the teſtis of

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the right ſide, which ſoon after ſwelled, and had continued to the preſent time gradually enlarging; and that ſeven weeks previous to his admiſſion he had obſerved a tumour in his abdomen, on the ſame ſide of the navel. The teſtis, at the time he became an hoſpital patient, was of conſiderable ſize, but preſerved its natural figure, being flattened on its ſides, and round on its fore part; its ſubſtance felt pulpy, yet not ſufficiently ſoft to give the ſenſation of fluctuation; the ſpermatic cord was ſomewhat enlarged. The tumour in the abdomen, though ſmall when he firſt obſerved it, was, at leaſt, four inches in diameter; and although it was not in the beginning attended with uneaſineſs, it now occaſioned very conſiderable pain. His general health, however, had not ſuffered, for he ſeemed equal to any labour, and his countenance exhibited no marks of diſeaſe.

27th. He has been in the hoſpital a fortnight, and complains of great pain in the abdomen, extending in a line from the teſtis

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to the tumour. He has loſt the healthy and florid aſpect which he had at the time of his admiſſion, and ſo ſudden a debility has ſucceeded that he finds great difficulty in raiſing himſelf from his bed. His pulſe is quick and feeble, the ſkin hot; he has a continual thirſt, a great degree of reſtleſſneſs, his appetite fails him, and his bowels are diſordered.

In addition to theſe ſymptoms, he complains of a diſagreeable ſenſation of diſtenſion in the upper part of the abdomen, after taking a ſmall quantity of food, which continues for ſeveral hours.

30th. The pain in his teſtis deſtroys his reſt, and he has had no ſtool for ſeveral days, excepting what has been produced by medicine.

Feb. 4. He frequently vomits, the tumour and teſtis are at intervals eaſy, at other times acutely painful; the pain extends from the former to the latter, along the ſpermatic cord, and thence down the inner ſide of the thigh.

18th. The pain in the diſeaſed parts is

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very acute, but much less so when he is warm in bed, than when exposed to cold.

21st. He complains of more pain than before; vomits frequently, and is very costive.

22d. The diarrhœa is returned, which has removed the sickness, and lessened the pain; however, he is very hot, and has no moisture upon the skin.

28th. He is easier, the swellings remain stationary, but his stools are frequent, black, and ill formed.

March 2. All the unfavourable symptoms are increased, the diarrhœa continues unabated, and he vomits frequently, milk being the only substance his stomach is able to retain.

12th. He has had no sleep, takes but little food, and is extremely emaciated.

14th. He died this morning.

EXAMINATION.

On making an incision into the enlarged testis, a pulpy mass appeared, com-

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poſed of broken coagulable lymph, and of a blood-coloured ſerum.

The abſorbents of the ſpermatic cord were very conſiderably enlarged, their coats thickened, and ſmall tumours appeared at irregular diſtances, ariſing from a diſeaſed and enlarged ſtate of their valves. Theſe veſſels were entirely impervious, and contained matter ſimilar to that found in the teſtis, which adhered firmly to their internal ſurfaces.

The ſmall glands on the loins, which receive the abſorbents of the teſtis and cord, by their enlargement and union, formed a tumour on the lumbar vertebræ, weighing nine pounds and an half.

As theſe glands are placed cloſe to the ſpine at the loins, and behind the duodenum and pancreas, when they became enlarged, they forced each of thoſe parts from their natural ſituation, and carried them to the anterior part of the abdomen, where they were compreſſed between the parietes and tumour.

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On opening the tumour, it exhibited a ſimilar appearance to the teſtis; and there could be no doubt of the diſeaſe being of the ſame nature.

The appearance of the thoracic duct was much altered: its coats were thickened and opake, and it was rounder than uſual, bearing more reſemblance to a nerve than to the principal trunk of the abſorbent ſyſtem.

The receptaculum chyli was filled with matter of the ſame kind with that found in the tumour, in the abſorbents of the ſpermatic cord, and in the body of the teſtis. It adhered with firmneſs to the inner coat of the veſſel, which was thickened, opake, and irregular.

The thoracic duct had undergone a ſimilar change, for in its cavity a ſubſtance was contained, reſembling that in the other diſeaſed parts, by which the tube was rendered impervious. Oppoſite to the curvature of the aorta the veſſel was loſt in a ſwelling as large as a moderate ſized walnut, differing in no reſpect, excepting in

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bulk, from the ſwelling in the abdomen. Above this tumour the duct appeared in an healthy ſtate, and terminated, as uſual, in the veins. Plate I. Fig. 2.

This diſeaſe in the teſtis was, I believe, truly cancerous. The great pain with which it was accompanied, and the rapid progreſs it made by abſorption, are proofs of the truth of this opinion. And as the appearance of the duct was the ſame, I believe that this part alſo was affected by cancer.

Although the obliteration extended farther than in either of the former inſtances, for two-thirds of the duct were obliterated, yet neither the lacteals, nor other abſorbents, were diſtended with their fluids; nor did any circumſtance appear which could lead to a belief that abſorption had been impeded.

To aſcertain the courſe of the chyle, I inſerted a tube, filled with quickſilver, into a large abſorbent on the loins. The mercury paſſed as far as the receptaculum chyli, and then ſtopped; but, by increaſing

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the column of injection, it ran through ſeveral veſſels behind the aorta into a large trunk, which paſſed the whole length of the cheſt on the left ſide of the ſpine. Through this veſſel the injection flowed to the firſt dorſal vertebra, and there entered the thoracic duct, which being above the part at which the veſſel was diſeaſed, there was no farther interruption to its paſſage into the jugular vein.

From the ſide of this trunk ſeveral ſmall veſſels aroſe, and having paſſed behind the aorta, entered the undiſeaſed part of the duct, near to the tumour.

In this caſe, then, as well as the former, the obſtruction was prevented from producing fatal conſequences by the anaſtamoſing veſſels on the left ſide of the ſpine having performed the office of the thoracic duct.

Such collateral abſorbents may be found in many ſubjects, in which the thoracic duct is undiſeaſed. Let that veſſel be tied at a ſmall diſtance from the receptacle, and quickſilver forced into the abſorbents

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of the loins, and it will often paſs by collateral branches to the left ſide, and into a trunk formed by the union of theſe veſſels, with others coming from the intercoſtal ſpaces; and thus, by a circuitous courſe, the quickſilver will enter the duct above the ligature. It is only when the thoracic duct is obſtructed that theſe abſorbents acquire any conſiderable ſize; for, as its functions are then performed by theſe collateral veſſels, they become ſo conſiderably enlarged as to be enabled to convey a quantity of fluid equal to that which paſſes through the duct in its healthy ſtate *.

Theſe veſſels, therefore, poſſeſs the ſame power with the arteries and veins, of adapting themſelves to different circumſtances. As the canal of an artery may be obliterated, yet the circulation continues by means of collateral branches; and many veins be

* It is but juſtice to remark, that Mr. Cline, in his anatomical lectures, when ſpeaking of a caſe of obſtructed thoracic duct deſcribed by Dr. Cheſton, uſed to point out the probability of theſe veſſels forming the new abſorbent channels.

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deſtroyed, yet the blood returns by others to the heart; ſo the abſorbents may be obſtructed to a conſiderable extent, yet abſorption will not be interrupted.

The abſorbents alſo poſſeſs a power of dilitation and contraction, according to the quantity of fluid they are required to convey; a circumſtance which the enlargement of the abſorbents on the left ſide of the ſpine, in theſe diſeaſes, ſufficiently eſtabliſhes. Plate II.

As the thoracic duct is ſmall, when compared with the ſize of the numerous branches, collectively taken, which pour their contents into it, its contents muſt be flowing in a conſtant ſtream; and any conſiderable interruption to its function would ſoon deſtroy life. It is probably on this account that nature has provided, through the cheſt, thoſe collateral branches, which prevented death in the preceding inſtances.

At the lower part of the neck alſo, near its termination, the duct is generally divided into two or three trunks, which again become united into one. It has been

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generally ſuppoſed that this ſtructure was for the convenience of receiving branches from the neck and arms, but that it may alſo ſerve as a proviſion againſt diſeaſe, is probable from what happened to me in tying the thoracic duct of a dog: having included only one of thoſe diviſions, the two others carried the chyle into the blood, and the animal recovered.

This proviſion is neceſſary in the neck where the glands are frequently enlarged, and the duct often expoſed to preſſure.

Although, from the foregoing obſervations, it appears that an obliteration of a great part of the thoracic duct may happen without any dangerous ſymptoms ſucceeding, yet I was ſtill deſirous of knowing if the obſtruction would not have proved fatal, had it been placed near the termination of the duct in the veins.

In order to aſcertain this, and to ſee what other effects might follow the experiment, I reſolved to attempt to make a ligature on the duct in a dog near to its entrance into the veins. Knowing the diffi-

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culty of the experiment, and that it had been tried by others without ſucceſs, its courſe in the dead animal was carefully examined before it was attempted to be tied in the living.

The thoracic duct in the dog enters the poſterior part of the left jugular vein, where that vein joins with the left ſubclavian; juſt previous to its termination it divides into three veſſels, which again unite into one near the coat of the vein. The experiment was made in the following manner. An opening through the ſkin expoſed the jugular vein, which was traced near to the firſt rib, where the ſubclavian joins it; by an inciſion under the jugular vein, the duct was opened, and a quantity of chyle eſcaped: a needle, with a ligature was paſſed under the orifice, and the duct ſecured. It is right to encloſe ſome of the ſurrounding parts with the mouth of the veſſel, otherwiſe the three diviſions of the duct will not be included. The difficulty of the experiment ariſes from the diſtance at which the veſſel lies from the ſkin, the vi-

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cinity of the large arteries and nerves of the neck, and from its close connexion with the pleura, a wound in which, if not healed by the first intention, will produce a general inflammation of that side of the chest.

I have also performed the experiment by making two ligatures on the jugular vein, and after dividing the vein between them, and having drawn the inferior portion of it over the first rib, the duct was easily discovered, and without much difficulty included in a ligature.

EXPERIMENT I.

June 29th, 1795. I tied the extremity of the thoracic duct. Having observed it distended with chyle before the ligature was passed, it was opened by means of a lancet, and about twenty drops of chyle were discharged. When tied below this orifice, it became much swelled, owing to the interrup-

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tion the abſorbed fluids met with in their courſe.

30th. The dog appeared lively, and lapped milk heartily, but almoſt immediately after became dull, and ſhewed no inclination to move.

July 1ſt. Nine o'clock in the morning the animal was unable to move, refuſed food, and ſeemed to be dying. At eleven o'clock he died, forty-eight hours after the duct had been tied.

DISSECTION.

On opening the abdomen, the following remarkable appearances preſented themſelves. Many of the viſcera were obſcured by an effuſion of chyle. The cellular membrane, connecting the laminæ of the myſentery, was loaded with that fluid, and the anterior ſurface of the pancreas was entirely concealed by it. The ſurface of the kidneys was covered, and the ſpace ſituated between the aorta and vena cava filled with it, as far as the upper part of the

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ſacrum; a ſmall quantity was alſo extravaſated into the cavity of the peritoneum. The lacteals were all empty.

Theſe appearances were owing to the rupture of the receptaculum chyli, which in the dog is very large. When it burſt, the chyle eſcaped into the cellular membrane, and through the peritoneum, and occaſioned the appearances we have deſcribed.

When the cheſt was opened, and the lungs were raiſed, I ſaw the thoracic duct diſtended with chyle, and at leaſt double its natural ſize.

The ligature, which had been placed on its extremity, had produced no ulceration of its coats.

Although the lacteals were empty, ſome of the other abſorbents were very much diſtended; thoſe particularly of the ſtomach, and concave ſurface of the liver.

The abſorbent veſſels of the hinder extremities, and organs of generation, were diſtended, but not in an equal degree with thoſe of the left fore-leg, and left ſide of

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the neck; one of the latter was larger than a crow's quill.

EXPERIMENT II.

July 2d. I FIRST divided, then tied, the thoracic duct of a dog; its courſe was peculiar, as it paſſed over the jugular vein, inſtead of behind it. When opened, about a drachm of chyle eſcaped. The animal refuſed food all that day.

3d. Could not be made to eat, ſeemed dull, and very unwilling to move.

4th. Lapped a great deal of milk.

5th. Refuſed food, and appeared extremely weak.

6th. Died during the night.

EXAMINATION.

CHYLE and lymph had been extravaſated in ſo large a quantity as to have entirely concealed the aorta and vena cava. The

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receptaculum chyli had burſt, and it was from this part the fluids had eſcaped.

The thoracic duct was much diſtended with chyle, the valves having prevented its eſcape by regurgitation.

EXPERIMENT III.

July 15th, 1795. I DIVIDED the thoracic duct of a dog, and did not afterwards include it in a ligature, but healed the wound by the firſt intention.

16th. The animal appears lively, and takes food.

17th. Is leſs lively, and will eat but little.

18th. Seems very weak, and refuſes food. He was bled this day; the appearance of the blood was natural, but the loſs of only a ſmall quantity made him faint.

19th. Found dead.

Upon diſſection, under the wounded ſkin of the neck, a pouch was found containing a conſiderable quantity of chyle.

The death of this animal was certainly haſtened by the loſs of blood, for although

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the quantity removed was ſmall, the diviſion of the duct prevented that loſs from being repaired.

Theſe experiments, which were ſeveral times repeated, prove that when the extremity of the thoracic duct is ſuddenly obſtructed, abſorption is no longer continued, and the conſequences are fatal to the animal. I met, however, with one exception to this. The duct being tied, as in the former experiments, although the dog, for ſeveral days, appeared duller, and leſs inclined to eat than before; yet he gradually recovered. It was found, upon inſpection, that a veſſel given off from the thoracic duct oppoſite to the diviſion of the trachia into the bronchiæ, had paſſed into the abſorbent trunk placed on the right ſide of the neck.

The quantity of chyle extravaſated varied according to the ſtate of the ſtomach and inteſtines; if theſe were diſtended with food, the cellular membrane was found loaded with chyle, but very little appeared if the animal was empty at the time of the experiment.

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The contractile powers of the abſorbents are proved by theſe experiments to be very ſtrong, for it appears that their action is ſufficient to occaſion a rupture of their coats. It is true that the receptaculum chyli, which was the part broken, is thinner, and leſs capable of reſiſtance than the thoracic duct; yet it is able to bear the preſſure of a column of quickſilver, more than two feet in height; the force, therefore, exerted by the abſorbents, muſt be acknowledged greater than that of ſuch a column of mercury; more eſpecially when it is remembered that living parts will reſiſt a force which will readily tear them when dead.

It is not neceſſary to tie the duct, to produce this effect; if an animal is fed with milk, and after half an hour the extremity of the duct is expoſed, and compreſſed for only a few minutes, upon ſubſequent examination the receptaculum will be found ruptured.

The time at which death enſued differed in different animals; thoſe which were fed juſt previous to the experiment died ſooner

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than thoſe whoſe ſtomachs were at that time empty. Young dogs lived longer than the old, and the lean much longer than the fat; for theſe laſt can ſupport but very ſlight injuries. None ſurvived the tenth day, nor did any of them die under forty-eight hours, unleſs there was ſome untoward circumſtance in the experiment. I am inclined, however, to believe that dogs which are very young will live a longer time.

That it is the interruption to abſorption, and not ſimply the wound, which is the cauſe of death, is proved by the inſtances in which I did not ſucceed in tying the duct; the animals then recovered, though the wound was equally large as in thoſe in which the experiment was ſucceſsful.

Other terminations of the abſorbents in veins have been ſuppoſed to exiſt beſide thoſe at the lower part of the neck on the right and left ſide. This opinion has not been founded upon accurate experiment, but only conjectured by thoſe who firſt oppoſed the idea of this ſyſtem, of veſſels performing the office of abſorption. Formerly the red

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veins were ſuppoſed to abſorb; it was next thought that abſorption was in part performed by theſe veſſels, and in part by the veins; and when this idea was obliged to be relinquiſhed, it was aſſerted that the abſorbents terminated in the veins, in various parts of the body.

Into this miſtaken opinion ſome good anatomiſts have fallen, from having found quickſilver eſcape from the abſorbents into the different branches of the vena portarum whilſt they were injecting the ſtomach and meſentery of the turtle. This has ſeveral times happened to myſelf; but I believe that the abſorbents ariſe from the veins in certain parts of the body, and that the openings by which the quickſilver enters, are the beginnings, and not the terminations, of theſe veſſels.

As proofs of this, we may obſerve that the circumſtance is only ſeen in thoſe animals in whom the valves of the abſorbents will admit of a retrograde motion of the quickſilver, and I have never obſerved it, except whilſt injecting contrary to the courſe of abſorption.

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The abſorbent alſo always becomes ſmaller as it approaches the vein with which it communicates.

The branches of theſe abſorbents paſs into them in a direction from the vein.

And as a further proof, I may mention that my friend Mr. Coleman, profeſſor at the Veterinary college, has ſeveral times found blood in the thoracic duct of horſes which had died without any rupture of the blood veſſels, which ſhews a direct abſorption of blood under certain circumſtances.

When quickſilver is thrown into abſorbent glands, it ſometimes happens that the veins are filled from them, but this, upon attentive examination, is found to ariſe from previous extravaſation. The ſame may be obſerved when the abſorbents of the teſtes are filled from the ſpermatic artery or vein.

The experiments which are here related furniſh a powerful argument againſt the idea of any other terminations of theſe

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veſſels, excepting thoſe at the lower part of the neck; for when the thoracic duct was tied, the abſorbents, inſtead of having emptied themſelves into veins, were many of them ruptured, and thoſe which remained whole continued fully diſtended with their fluid.

How far do theſe experiments confirm, or contradict, the opinion which ſome have entertained of a retrograde motion of the abſorbents? Should we not have found, if this idea were true, that the fluids, inſtead of having ruptured the duct, when interrupted, in their proper channel, would have returned into the cavities from whence they had been removed; and how did it happen that thoſe abſorbents which were not ruptured remained diſtended?

An opinion has of late years prevailed that hunger depends leſs upon an empty ſtate of the ſtomach, than upon a ſenſation of general want in the ſyſtem. The ſymptoms of tabes myſenterica have furniſhed the arguments which ſupport this opinion, ſince the patient, during the pro-

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greſs of that diſeaſe, eats more frequently, and in larger quantities, than uſual, and although the ſtomach is always diſtended, there is ſtill a ſtrong inclination for food.

The diſeaſed ſtate of the meſenteric glands, by preventing the paſſage of the chyle into the blood, has been ſuppoſed to occaſion theſe ſymptoms.

It might be expected that the experiments here related, as they alſo occaſioned an interruption to abſorption, would furniſh additional arguments in ſupport of this opinion; but the great irritation, produced by a large wound, and by the ſudden deſtruction of ſo important a function, prevented any certain concluſions with regard to this circumſtance.

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EXPLANATION *of the* PLATES.

PLATE I. Fig. 1

A First pair of diſeaſed valves
B. Second pair.
C. Third pair.

Fig. 2

D. Anaſtamiſing abſorbent.
E. A ſmall fungus.
F. A large fungus.
G. A pair of valves in a healthy ſtate.
H. Two abſorbents entering the duct, their valves diſeaſed

Fig. 3.

I. Receptaculum chyli filled with ſolid matter.
K. The thoracic duct diſtended with ſimilar matter.
L. A tumour on the duct
M. The duct emerging from the tumour undiſeaſed.
N. The aorta.

PLATE II.

A. The aorta.
B. Vena azugos.
C. Thoracic duct.
D. Receptaculum chyli.
E. Termination of the thoracic duct.
F. Right abſorbent trunk.
G. Right ſubclavian vein.
H. Left ſubclavian vein.
K. Superior cava.
L. Tumour on the duct.
M. Abſorbents in the loins.
N. New thoracic duct.
O. The entrance of the new duct into the old above the diſeaſe.
P. The diaphragm.

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VIII. *Two Caſes of Rabies Canina, in which Opium was given, without Succeſs, in unuſually large Quantities. The one by* WILLIAM BABINGTON, *M. D. Aſſiſtant Phyſician to Guy's Hoſpital; the other by* WILLIAM WAVELL, *M. D. Communicated by Dr.* BABINGTON.

Guy's Hoſpital, 1784.

ON Wedneſday, the 20th of October, Mr. B——, a gentleman in practice in the neighbourhood, came to the hoſpital, about eleven o'clock in the forenoon, to procure admittance for a young man, in whom there appeared reaſon to apprehend the approach of canine madneſs.

Mr. B——'s account was, that this perſon, whoſe name was William Yates, and another man, both employed in the ſame warehouſe, had, on the morning of the 30th of Auguſt, been bitten by the yard-dog, though they had been in the daily habit of feeding him, and had never before

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obſerved in him the leaſt diſpoſition to injure them;—that the companion's wound was on the right hand, the thumb of which had been much torn, and diſcharged conſiderably, but was then nearly healed, and the man in perfect health;—that Yates had been bitten a few minutes after his companion in both hands, but ſo ſlightly, that the marks were ſcarcely viſible;—that they had both taken the Ormſkirk medicine according to the uſual directions;—that, on the Friday preceding, October the 15th, Yates had found himſelf chilly and uncomfortable, and complained of a pain in his right arm and ſhoulder, but whether antecedent or ſubſequent to the chilline ſs, could not be clearly aſcertained;—that on the Saturday and Sunday he had been drooping and low-ſpirited, on Monday was ſcarcely able to work, and that on Tueſday morning he had taken very little breakfaſt, quitted his dinner, eaten no ſupper, and, on account of a ſenſe of tightneſs of his ſkin, had paſſed a very reſtleſs night. It was added, that, three days

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before this accident, another dog, belonging to the premiſes, had been bitten by the yard-dog, but at this time ſhewed no ſign of madneſs; and that, in conſequence of the accident, the yard-dog had been immediately ſhot.

Preparation being made for the young man's reception into the hoſpital, I went with Mr. B—— to ſee him, previous to his removal, and found him in bed, lying on his back, with the bed-clothes tucked cloſe about his neck. His countenance, as he lay, ſeemed rather fluſhed, and in his looks there was a peculiar expreſſion of wildneſs; yet he was perfectly ſenſible. Such queſtions as were aſked him, he anſwered with the greateſt readineſs, but was occaſionally interrupted by a convulſive ſigh, or broken involuntary inſpiration, ſuch as is generally produced by the ſudden application of cold. He was ſo particularly ſuſceptible of cold air, that it was with much reluctance he ſuffered us to feel his pulſe; and though he could bear noiſe, and talk of liquids without emotion, there was nevertheleſs

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an obvious averſion to drinking. He confeſſed he was thirſty, but did not, he ſaid, care to drink, as it gave him pain to do ſo.

At half after four in the afternoon he was brought to the hoſpital, and taken immediately to the warm bath, as preparatory to the uſe of mercurial frictions, which, in the few well-authenticated inſtances of recovery from eſtabliſhed canine madneſs, had been conſidered as the principal remedy, and ſtood recommended on the beſt authorities.

As ſoon as he entered the bath-room, and began to undreſs, he appeared much diſturbed, looking once or twice at the water with apparent dread; and when he came to the ſide of the bath, which was heated to 96°, inſtead of uſing any precaution, he jumped in at once, ſtarted, and fetched a ſudden convulſive ſigh. He was affected in the ſame manner in the act of lying down in the bath, and more eſpecially as the water was reaching his neck; but, having gotten his body under the ſurface of the water, he expreſſed

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himſelf as being eaſy, and lay perfectly quiet. That a more favourable opportunity might be given to the operation of the mercury by a further palliation of the ſymptoms, five grains of ſtrained opium were now given him in the form of a ſmall bolus, which he ſwallowed without much difficulty.

He continued in the bath for twenty-five minutes with unexpected compoſure, when he began to grow uneaſy, and, before he could be taken out, was ſeized with a violent ſpaſm, by which he was turned quite round, plunged ſuddenly to the bottom of the water, and without immediate aſſiſtance, would probably have been ſuffocated. When removed from the bath, a diligent friction was made, upon his legs and thighs, of two ounces of the ſtrong mercurial ointment, and another bolus exhibited, containing twenty-five grains of opium; for it was conceived that the ordinary doſes of this remedy were not likely to be productive of any permanent advantage. A bliſter was applied to the

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breaſt, and the patient, being conſtitutionally robuſt, and his pulſe full, and rather frequent, fourteen ounces of blood were taken from his arm by a large orifice; after which he went quietly to bed. The blood, on coagulation, ſhewed no ſign of inflammation, nor any other remarkable appearance. At ſeven o'clock the opium had produced no effect, either in procuring ſleep, or an abatement of the general irritation.

The pulſe was now at 92. When drink was offered him he took it willingly: the moment, however, that the veſſel reached his lips he was violently convulſed. Having had no ſtool for the two preceding days, the opium was now increaſed to half a drachm, with the addition of ten grains of calomel. At ten o'clock the bolus was repeated without the calomel. At a quarter after eleven, there being ſtill no diſpoſition to reſt, but rather a tendency to delirium, the bolus was again repeated, and of ſome beer, that was brought him by his own deſire, he drank nearly half a pint,

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though not without much precaution and ſtruggling. He ſwallowed beſides, one or two mouthfuls of bread ſoaked in the beer, together with ſome currant jelly. At one o'clock the bolus was repeated a ſixth time. Soon after this he became outrageous; he talked of the dog, ſung, toſſed himſelf from ſide to ſide with great violence, ſpat frequently, and to a great diſtance, but ſhewed no diſpoſition whatever to be miſchievous. The ſeventh and laſt bolus was given him at three o'clock. At four o'clock, his ſtrength being exhauſted, he became more compoſed. He now began to bring up from his ſtomach large quantities of a thin, chocolate-coloured liquor, and from his mouth there was a vaſt ſecretion of frothy ſaliva, which, falling into the fauces as he lay on his back, produced a diſagreeable rattling in his throat. His eyes were fixed, and of a livid-red colour, his mouth open, his countenance fluſhed, his reſpiration ſlow and laborious, his pulſe ſcarcely perceptible. In this ſtate he continued till ſeven o'clock

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in the morning, when his ſufferings were brought to a concluſion.

Upon the examination of the body after death, the veſſels of the dura and pia mater were found unuſually diſtended with blood, but not to an extreme degree; and between the dura and pia mater, and within the folds or proceſſes of the pia mater, there was a ſmall quantity of ſerous fluid, which, in ſome places, ſeemed to have a ſlight degree of conſiſtency. The lungs, too, were turgid with blood, particularly on the right ſide. The ſuperior convex part of the great lobe of the liver was of a ſhining blue colour, and the gall-bladder full of bile. On the external ſurfaces of the ſmall inteſtines there were ſlight appearances of inflammation, and the membrane lining the internal ſurface of the trachea was unuſually red. But there was no rupture of veſſels to be met with any where, no deficiency nor preternatural appearances of fluid in any of the cavities, no diſeaſe of the ſtomach or heart, no inflammation of the diaphragm or other

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muſcles of reſpiration, no enlargement of the glands of the axilla, nor, in ſhort, any other appearances worth remarking, than thoſe which have been juſt enumerated.

The caſe of this unfortunate young man gives riſe to ſeveral obſervations. In the firſt place it ſeems, beyond a doubt, from the connexion of the original accident with the commencement, progreſs, and termination of the ſymptoms, that this was a genuine inſtance of canine madneſs, than which the hiſtory of human infirmity does not furniſh a more ſtriking and hopeleſs example.

It may, in the next place, be remarked how clearly is here pointed out the period of communication between the general ſyſtem, and that part where the canine poiſon was in the firſt inſtance depoſited; which, in a prophylactic point of view, muſt be conſidered of the utmoſt importance. For, whether we believe the infection of this diſeaſe to be communicable to the general ſyſtem, through the medium of nervous ſympathy (as is the opinion of ſome very

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able authors), or productive of its effects in conſequence of direct abſorption, we are taught, by fatal experience, that, ſhort of its entire removal, the patient is in no inſtance ſecure. Had this poor man, when the accident firſt happened, ſubmitted to the actual cautery, ſuffered the wounded parts to be removed by exciſion, or allowed them to be ſcarified, as ſome have ſtrongly recommended, and covered afterwards with muriate of antimony, or ſome other cauſtic application, there is every reaſon to be aſſured that he might have lived in perfect ſafety. But theſe ſteps being neglected, at the end of a certain time the neighbouring parts became painful, and the ſyſtem alſo affected. "On the Friday "preceding his admiſſion into the hoſ- "pital, he found himſelf chilly and un- "comfortable, and complained of a pain "in his right arm and ſhoulder; but whether "this pain was antecedent or ſubſequent to "the chilline ſs, could not be aſcertained." Granting, then, that the local deſtruction, or removal, of the poiſon would have been

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effectual in the beginning in preventing the diſeaſe, how long might this have been delayed, or at how late a period might it have been attempted with a reaſonable expectation of ſucceſs? The anſwer, which both analogy and obſervation ſeem to give, is,—at any time, antecedent to that at which the ſymptoms, now alluded to, occurred. For it is univerſally underſtood that in other diſeaſes communicable by inoculation, that is to ſay, by the local application of the infection or poiſon producing them, there is a ſpecific period, prior to which the diſorder may be at any time prevented by the removal of that part where the matter was at firſt introduced; and in the Memoirs of the Royal Society of Medicine at Paris, may be found numerous inſtances of local treatment being effectual in preventing the diſorder in queſtion, at the expiration of many days.

Again, the other man's eſcaping the diſeaſe, though he was firſt bitten, is an additional proof to the many already upon record, that, independently of preventive me-

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dicines, the infection of a rabid animal may fail in producing its ſpecific effects. For had the Ormſkirk medicine been of uſe in the one caſe, it ſhould have been ſo in the other. And hence a great ſource of deception in all the attempts that have been made to render ſuch remedies effectual. It correſponds, too, with general obſervation, that this man's wounds ſhould have been larger, ſhould have diſcharged more freely, and been longer in healing, than the other's. But it appears to me probable, that the circumſtance of large wounds being leſs dangerous than ſmall ones, depends rather upon the greater degree of inflammation conſequent upon the injury, producing in the part an inapitude to be affected by the poiſon applied to it, or perhaps an alteration in the nature of the poiſon itſelf, than that it ſhould be accidentally waſhed away by the more copious hemorrhage. And here it may be obſerved, that, as other poiſons have been found to differ in their effects, according to the period of the diſeaſe, the proportion in which they

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have been applied, the conſtitution into which they have been received, and other accidental circumſtances, ſo was it remarkably the caſe with regard to the contagion by which this accident was occaſioned. The bite of the wolf, for example, appears, cæteris paribus, to be more dangerous than that of the dog, or, perhaps, than that of any other animal; and of the dog, at different periods of the diſeaſe, and on certain occaſions, more dangerous than at others: even at the ſame period there ſeems to be a difference, according to the manner of the accident.

One of the moſt remarkable examples of this kind is given in the before-mentioned publication, on the authority of M. M. Retierre, ſurgeons and brothers at Brive. Seventeen perſons were bitten by a mad wolf, in May 1784. Ten were infected, and died of the diſeaſe. Of theſe, nine died from the ſecond to the third day of the attack; one only ſurvived to the end of the fifth day; three only were delirious; and no diſpoſition to bite in any. But what appears more eſpecially ſingular is, that in theſe ten per-

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ſons, the order of ſeizure ſhould ſo exactly correſpond with that of the bite; the firſt bitten dying on the fifteenth day from the accident, the ſecond on the eighteenth, the third on the nineteenth, the fourth on the twenty-eighth, the fifth on the thirtieth, the ſixth on the thirty-third, the ſeventh on the thirty-fifth, the eighth on the forty-fourth, the ninth on the fifty-ſecond, and the tenth on the ſixty-eighth.

The time, in which the diſeaſe made its appearance, in the caſe here related, correſponds to what may be called the average period of its communication from the rabid animal to man. It was on the forty-ſeventh day after the accident that the poor man firſt began to complain, and from four to twelve weeks is the interval at which this diſorder has ſhewn itſelf in moſt other inſtances. In dogs it is nearly the ſame.

To thoſe who are acquainted with that ſucceſſion in which the ſymptoms of genuine canine madneſs generally ariſe, their progreſs in the foregoing inſtance will not ſeem extraordinary. A high degree

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of irritability, great anxiety and reſtleſſneſs, a dread of liquids, and a preternatural ſecretion of frothy ſaliva, are the almoſt univerſal concomitants of this diſeaſe, and many inſtances are to be found of its ending ſpontaneouſly in delirium.

The influence of cold air has, on ſome other occaſions, been much more ſtrongly marked. Mention is made, in the Medical Memoirs, of a patient who kept his hand continually on his mouth, under the apprehenſion of being ſuffocated by the motion of the air in inſpiration, and of another who dreaded that any perſon ſhould come near him, the impreſſion of their breathing being productive of the greateſt diſtreſs *.

* In a caſe, an account of which I have been lately furniſhed with by my friend Mr. Harris of Graveſend, the ſame thing was particularly remarkable.

A healthy young man, of twenty-one years of age, had been bitten in the thumb by a favourite lap-dog. The wound healed in a few days, and for five months, there being, on the part of the patient, no ſuſpicion of any ill conſequences from the accident, he continued in perfect health. But at the end of this time, the be-

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There is no other inſtance that I know of in which ſo large a quantity of opium was exhibited in ſo ſhort a ſpace of time; in all 180 grs. And yet, whatever may have been the effect of this remedy, either in producing or increaſing the delirium, it is obvious that it had no direct influence even in mitigating the diſorder, which, to the laſt, preſerved its original character.

It was ſcarcely to be expected that the blood ſhould have any thing remarkable in its appearance from the period at which it was taken, for as yet the general derangement was comparatively ſlight; neither could it be ſuppoſed, from the rapid aggravation of the ſymptoms, that any advantage ſhould reſult from the uſe of the mercurial frictions. There was no apparent benefit from the bliſter.

With regard to the appearances on diſſec-

ginning of July laſt, he was ſeized in the uſual way, and became ſo ſuſceptible of expoſure to air, that he could not ſuffer any one to breathe upon him, and upon the admiſſion of air, by opening the door or windows of his chamber, was always violently convulſed.

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tion, it is probable that the diſtention of the veſſels of the brain, and the conſequent effuſion of ſerous fluid within its membranes, together with the accumulation of blood in the lungs, aroſe from the ſame cauſe, namely, a ſpaſmodic affection of the heart, extending to the larger arteries. But this may have been accidental; nor does it appear, from all that I have been capable of collecting, that the examination of the bodies of thoſe who have fallen under ſimilar accidents, has thrown any light on the nature of this terrible malady.

From the general hiſtory of the complaint, however, I think it may ſafely be inferred,—that it depends upon the application of a ſpecific contagion, from the introduction of which, by various unobſerved accidents, may have ariſen many of thoſe caſes of what is called ſpontaneous canine madneſs;—that this contagion is contained in the ſaliva only, and muſt be applied to a wound, or introduced under the ſkin, to be capable of producing its effects;—that it is at ſome times more virulent than at

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others, and even when most virulent, and where no precaution has been used, proves often inoffensive;—that when the disease is the consequence of its introduction, there is, in the greater number of instances, antecedent to the general affection, a pain and inflammation of the part where the poison was originally inserted, which may, therefore, be considered as the period of communication;—that it makes its appearance, for the most part, from the third to the fifth week, as has been already mentioned, though it has, in some instances, occurred much earlier, and in others not for many months*;—that we know of no means to be depended on as a preservative short of the total removal of the poison, which is best effected by ex-

* I have lately been informed of a case which occurred not long since in this neighbourhood, where, it appears, upon the most respectable authority, that in consequence of the bite of a mad cat, the symptoms first made their appearance on the 365th day from the accident, without the least ambiguity with regard to the nature of the complaint, or the seeming possibility of its being contracted in any other way.

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ciſion, and the ſubſequent application of cauſtic;—that mercury, notwithſtanding what has been ſo frequently aſſerted of its prophilactic powers, has on many occaſions failed;—that the diſorder having unequivocally ſhewn itſelf, there is ſcarcely an inſtance of recovery; and conſequently, that in its future treatment ſome new remedy ſhould be reſorted to;—that it generally deſtroys in the courſe of a few days;—that very little information has been gained by the examination after death of thoſe who have died of the diſeaſe;—that there is ſeldom a diſpoſition to be miſchievous;—that wounds of the face have been found more frequently fatal than thoſe of any other part;—that a large wound is leſs dangerous than a ſmall one;—and that ſo far as has been yet obſerved, it makes no diſtinction of age, ſex, or temperament.

Though we have numberleſs examples of the communication of the canine poiſon from one animal to another, and from different animals to man; it has

not, I believe, been as yet aſcertained, whether it be communicable from one man to another, or from man to the brute. I had, a few years ago, with the aſſiſtance of my friend Mr. Cline, an opportunity of putting this matter in ſome meaſure to the teſt, by taking the ſaliva of a perſon in the laſt ſtage of canine madneſs, and inoculating with it, while perfectly freſh, a dog, three rabbits, and ſeveral fowls. Particular pains were taken by Mr. Cline in the manner of inſerting the poiſon, but in none of theſe inſtances was there the leaſt appearance of the diſorder at the expiration of three months. It is, however, poſſible, that theſe may have been among the many caſes in which the canine poiſon has failed to produce its effects, or that there may have been ſomething unfavourable to its operation in the manner of its introduction; which correſponds with the following communication from my friend Mr. A. Cooper.

" In Auguſt 1788 a dog entered the ſhop " of a Mr. Chaplin, a wire-worker on Fiſh

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" Street Hill, and after biting Mr. C.'s dog,
" ran away, and was not afterwards heard of.
" In twenty-five days the animal which had
" been bitten became dull, and uninclined
" to move; and as it attempted to bite every
" one by whom it was disturbed, orders were
" given for its being confined in a cellar at a
" distance from the family. As long as it
" lived it made efforts to bite all who ap-
" proached, and at other times was observed
" tearing in pieces every thing within its
" reach. Its eyes exhibited a fiery redness,
" and its mouth was covered with foam.
" On the thirtieth day from the time of its
" being bitten, the animal expired. Soon
" after death the dog was removed to St.
" Thomas's hospital, where, upon dissection,
" I found, as I have in several other dogs who
" died of hydrophobia, an inflammation of
" the internal membrane of the stomach,
" with several small clots of blood effused
" both within the stomach, and in the cellu-
" lar substance, which connects the mucous
" coat to the muscular. In the pharynx, also,
" a large circular spot of inflammation was

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"observed. As the animal was so recently "dead that the saliva could not have under- "gone any putrefactive change, I collected "a quantity of that fluid, and having procur- "ed a dog, a pig, a fowl, and a rabbit, I in- "serted, from the point of a lancet, between "two and three drops under the skin of the "inner part of the thigh of each. The dog "and fowl were kept confined for nine "weeks, and the pig seven, but without any "appearances of hydrophobia. The dog af- "terward became the property of a gentle- "man, who kept him near twelve months, "and he had never any marks of the dis- "ease. The rabbit was accidentally killed on "the fourth day from the experiment."

In the following case, for which I stand indebted to the kindness of my friend doctor Wavell, of Barnstaple, will be found an additional proof of the inefficacy of opium in the treatment of this melancholy disorder, together with many other circumstances, tending to confirm the general conclusions to which I have been led regarding it.

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CASE by Dr. WAVELL.

Robert Pick, about twenty-three years of age, ſervant to a gentleman in the neighbourhood of Barnſtaple, Devon, on April the 6th, 1795, was bitten in the right hand by a ſpaniel belonging to the family. The wound was a lacerated one, but, from the dog's having lapped water, no ſuſpicions were entertained of his being mad; the wound was therefore dreſſed ſuperficially, and ſoon healed. The young man continued well, and wholly free from any apprehenſion of ill-conſequences from the bite, till June 8th, about ten o'clock at night, when, after having waited at ſupper, he was ſeized ſuddenly with a cold ſhivering, ſimilar to what he deſcribed as having formerly felt from an attack of ague. He ſoon after went to bed, and carried with him, by his own deſire, a glaſs of gin and water, with a view of inducing perſpiration. This night was paſſed reſtleſsly, and almoſt wholly without ſleep. He had

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been incapable of ſwallowing any of the gin and water, nor could he get down any tea at breakfaſt. He told one of his fellow-ſervants that ſuch was his dread of attempting to ſwallow any thing, that had he not been confident that the dog was not mad, from having ſeen him repeatedly drink water, he ſhould have ſuppoſed that his own diſeaſe was occaſioned by the bite. To aſcertain the period of the hydrophobia, as exactly as poſſible, it may be worthy of remark that he drank tea with the other ſervants on the preceding evening at ſeven o'clock, which was the laſt thing he took that night, for he complained of being attacked with the ague about ſupper-time, and, when his fellow-ſervants went to ſupper, did not ſit down with them.

On Tueſday, 9th of June, I firſt ſaw him, ſitting by the fire in the kitchen. His countenance wore an aſpect of anxiety and diſtreſs, and he appeared to be greatly dejected. To give him as much confidence as poſſible, and to divert his mind from a ſuſpicion of the nature of his diſorder, as I was informed, that a few days ſince he

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had played at fives, by which he had been violently heated and fatigued, I directed my inquiries to that circumſtance as to the probable cauſe of his illneſs, which, I ſaid, was a violent cold. This, I obſerved, gave him great pleaſure. From himſelf I obtained the following information: that he had, for three or four days paſt, felt a rheumatic pain and numbneſs in the right arm, attended with a kind of pricking ſenſation, extending up the arm to the ſhoulder; but that this ſenſation had increaſed ſince he played at fives, and that he had alſo a ſwelling in his throat, which prevented ſwallowing. When he gave me the account of this pricking ſenſation, I well remember he drew the other hand, when deſcribing it, from the right hand upwards along the courſe of the arm to the ſhoulder, reſting that, the left hand, flat upon the pectoral muſcle, the tips of the fingers touching nearly the point of the ſhoulder. I could not be more particular in my inquiries, leſt I ſhould excite alarm. At my requeſt he attempted to ſwallow ſome whey, though he conſented

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to do ſo with very great reluctance; and when the cup was brought towards him, before it came near his lips, he was ſeized with a ſpaſm, which drew his head back ſuddenly with much violence; he uttered, at the ſame time, a deep convulſive ſigh, and at that very inſtant thruſt away the cup with the greateſt earneſtneſs. I could not induce him to repeat the attempt, as he declared it was not poſſible for him to ſwallow any thing. After much heſitation, I prevailed on him to take a ſmall quantity of ſugar into his mouth: the ſpaſm accompanied the effort, though not with the ſame degree of violence as when he attempted to ſwallow the whey. Juſt before I ſaw him he had vomited a kind of viſcid, greeniſh phlegm. The body was regular, the urine copious, and natural in its appearance. The pulſe 108; tongue red in the middle, the ſides moiſt and florid; no appearance of inflammation of the tonſils or fauces. I directed two pills, containing four grains of opium, to be given immediately, and to be repeated

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every hour; and as he wiſhed much to have a bliſter on the throat, which he believed would aſſiſt his ſwallowing, I ordered one to be applied.

At four o'clock, P. M. I ſaw him again. He had been prevailed on to take two pills only. He had had ſome ſleep, but ſtarted frequently; and though he awoke much hurried, was ſoon compoſed. Pulſe 120, and ſmall. The bliſter on the throat had begun to irritate. He complained much of deafneſs, and alſo of thirſt; but could not be prevailed on to attempt drinking, though he did not appear diſtreſſed when liquors were mentioned. He ſeemed, indeed, at times, to ſpeak of them himſelf, with great ſatisfaction, ſaying how highly he ſhould reliſh a baſon of tea, if the ſwelling of his throat would permit him to ſwallow it; that he verily believed he could drink a quart. Six grains of opium were now given him. At eight o'clock I ſaw him again. During my abſence he had been prevailed on to take into his mouth ſome ſmall pieces of bread, which had been pre-

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viouſly ſoaked in ale; and, at my deſire, he a ſecond time attempted it. He could not ſuffer a cup or ſpoon to be brought near his mouth. He took the bread in his fingers, and conveyed a ſmall piece, as it were by ſtealth, under his chin, into his mouth. The ſpaſm, notwithſtanding, followed immediately, and was repeated at every effort, accompanied conſtantly by a ſtrange kind of noiſe, ſcarcely to be deſcribed, appearing to ariſe from the forcibly drawing in of air through the noſe; occaſioned, in part, by the ala naſi being pinched in, and in part from the capacity of the trachea, near the larynx, being narrowed by ſpaſm. But the diſtreſs cauſed by theſe efforts was ſo great, that he could not afterwards be induced to repeat them.

On Wedneſday, June 10th, I ſaw him ſoon after eight o'clock A.M. He had paſſed the night with a great degree of reſtleſſneſs, and wholly without ſleep. His anxiety and diſtreſs were ſo much increaſed about four o'clock in the morning, that the family ſurgeon had been called in. By him

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I was informed that he had found him much agitated, and in great apparent diſtreſs; that, after a little converſation, he became more compoſed, but ſoon was ſeized with violent ſpaſms, from the window-ſhutters being opened ſuddenly, which produced a ſenſe of immediate ſuffocation; that during the night he had paſſed two ſtools, having been prevailed on, the preceding evening, to ſuffer a laxative enema to be thrown up; that he had alſo voided ſome urine, but in ſmall quantities. When I entered the room, he ſaid he was now much better; that he could breathe much freer, and that the ſenſe of ſuffocation was nearly gone, in conſequence, as he believed, of the application of the bliſter. But, as his head was much confuſed, and he was nearly deaf, he wiſhed that bliſters might be applied behind his ears. Favourable as this account of himſelf was, every ſymptom appeared aggravated. The tongue dry; pulſe much quicker and weaker; and the ſpaſms, together with the ſenſe of ſuffocation, returning, whenever he made an

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effort to move, or whenever any perſon entered the room; and the ſame effect produced as often as any perſon, who had been in the room for ſome time, came near him in front. But the greateſt diſtreſs appeared to be excited when any one's hand came near his face ſuddenly or unexpectedly, which ſometimes happened while the attendants were adjuſting his night-cap. He had taken fifty grains of opium ſince three o'clock yeſterday. But, as he could now with difficulty be prevailed on to put any thing into his mouth, though even in a ſolid form, and ſuffered the injection of the enema, I directed one to be thrown up, with ten grains of opium, and that four grains of opium in pills ſhould, if poſſible, be given every hour.

I did not ſee him again till three o'clock P. M. as I was obliged to viſit a patient in the country, at the diſtance of ſome miles. The enema had been retained, and four grains of opium had been taken in pills, yet no ſleep was produced, nor was there the leaſt diminution of ſpaſm; on

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the contrary, every ſymptom was aggravated, and he was become froward and impatient.

From this period he could not be prevailed on to attempt ſwallowing any thing, not even bread previouſly ſoaked in ale. The few pieces which he had been prevailed on to ſwallow, had, he declared, produced ſo dreadful a ſenſation in his throat, extending from his jaws to his ſtomach, that to attempt it again would occaſion his death. The chamber he was in was very ſmall, and, fearing that if he ſhould become ungovernable there might not be room enough for the neceſſary attendants, and as he was beſides perfectly rational, and had an uncommon degree of firmneſs of mind, I perſuaded him to conſent to be removed into an adjoining chamber. Whilſt the bed was putting up in that, though the noiſe was conſiderable, and at times loud and unexpected, from the ſtrokes of the hammer, it appeared not to affect him in the ſlighteſt degree. His

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attention was wholly occupied by the fear of paſſing a gallery of not more than ten feet in length; the cold air of which, he felt aſſured, would inevitably occaſion immediate death. This fear I endeavoured to remove, and in ſome meaſure ſucceeded. As the bed on which he had ſlept was to be removed into his new chamber, a ſervant was folding up the bed-clothes, the motion of which affected him much, and he begged moſt earneſtly that ſhe would deſiſt, as the ſpaſms were thereby produced in a very violent degree. I obſerved too, that the duſt ariſing from ſhaking the bed produced much diſtreſs and ſpaſm, and that he conſtantly endeavoured to beat back the particles of it with his hand.

As the bed was now ready, and he declared himſelf unable to walk, I prevailed on him to ſit down in a chair, and to permit the attendants to carry him. But the inſtant the chair was lifted from the ground, he ſprang up, and with a loud ſhriek flew to the other end of the room, with a violence, wildneſs, and agitation, not to be deſcribed;

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and it was a conſiderable length of time before I could ſooth him. His ſituation was now indeſcribably diſtreſſing; his eyes were reddened, and there was a wildneſs and horror in his aſpect ſcarcely to be conceived; his pulſe quick and tremulous could ſcarcely be felt; a tough, viſcid phlegm was inceſſantly collecting in his mouth, which he in vain endeavoured to ſpit off as it gathered on his lips; nor could he ſuffer a napkin to be employed to wipe them, nor permit any thing to touch his face. At times, indeed, though evidently with great reluctance and dread, he drew the phlegm from his mouth with his fingers, and with a motion rapid as thought, and a vehemence to be conceived by thoſe only who have ſeen ſimilar inſtances, he threw it againſt the wall. A vomiting, of a bilious, viſcid matter, now took place, and he was evidently ſinking. Some brandy was in the room, and though I had before in vain urged him to take into his mouth a bit of bread ſoaked in it, he

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now called loudly for a glaſs of it. This he took in his hand with much eagerneſs, ejaculated a bleſſing on his maſter and miſtreſs, threw the brandy into his mouth, and ſwallowed it at one gulp, as if forcing it down with every poſſible violence, and inſtantly fell back dead in the chair.

Thus cloſed a ſcene, the moſt diſtreſſing that can be imagined to a medical practitioner, obliged to witneſs diſtreſſes he knew not how to relieve, and to the knowledge of which the experience of ages had added little uſeful; to hear entreaties for relief urged with every poſſible degree of plaintive earneſtneſs, and that too by a perſon with whom he had been well acquainted for a ſeries of years.

The young man retained the full poſſeſſion of his faculties to the laſt moment of his exiſtence. Through the whole courſe of the diſeaſe he did not appear to be conſcious of its real nature. He never mentioned the dog, nor did he ever allude to the diſeaſe as being hydrophobia, except on the morning immediately after he was taken ill, when

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he ſaid that, had he not ſeen the dog drink water, he ſhould have thought his own illneſs proceeded from the bite. He never ſhewed any diſpoſition to injure any of the attendants; nor did he ever bark like a dog. The noiſe he made, in drawing air into his lungs, was undoubtedly peculiar; but neither in my opinion, nor in that of any of the other medical gentlemen who attended him, did it bear the leaſt reſemblance to the barking of a dog.

In this unfortunate caſe the quantity of opium given in twenty-four hours amounted to fifty grains, and within another hour four grains more were given by the mouth, and ten in an enema, without producing the leaſt alleviation of the ſymptoms.

I have now, my dear Sir, given you an accurate account of this caſe of hydrophobia, to be added to the many unfortunate ones which already ſwell the medical annals; and, though I add nothing new, it affords an additional proof of the inefficacy of opium in this diſeaſe, and of the neceſſity of having recourſe to other re-

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medies: but to what other remedies, my experience, in this caſe, does not allow me to form any judgment. I had reſolved on the employment of turbith mineral, but could not perſuade the patient to ſwallow it. The vomiting therefore was ſpontaneous, which, had any turbith been given, I ſhould have attributed to that medicine. I have omitted to obſerve, that, on the laſt day of the young man's illneſs, he appeared to be uncommonly ſuſpicious of every perſon, and of every thing brought into the room, which I ſuppoſed to ariſe from a fear leſt any fluid ſhould be brought near him. It may be worth while to ſtate further, that the dog, by whom the young man had been bitten, appeared for two or three days afterwards to be ſlightly affected with diſeaſe, refuſed food, but drank water freely. He was, however, contrary to his general diſpoſition, uncommonly ſnapiſh and irraſcible, and fell upon the other dogs, who fought with him moſt readily.

After having bitten the young man, he ran off, and was loſt for a day and a half.

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During his abſence he killed ſeveral lambs, a part of one of which he was ſeen eating. He was at length ſecured by a neighbouring farmer, and was brought home in the evening, and confined till his death. Soon after he was brought home, a pan of water was placed near him, to which he ran moſt eagerly, and lapped with every appearance of eaſe, and continued to do ſo when laſt ſeen at night. He died early the next morning. He did not eat the meat which had been thrown to him, though he ſeized it greedily, and attempted to hide it in the ſtraw.

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IX. *A Caſe of the Cæſarean Operation performed, and the Life of the Woman preſerved, by* JAMES BARLOW, *Surgeon, late of Chorley, Lancaſhire, but now of Blackburn in the ſame County. Communicated by Dr.* HAIGHTON.

JANE FOSTER, the ſubject of the following caſe, reſides in the village of Blackrod, about five miles from Chorley, is about forty years of age, of a robuſt conſtitution, and has had ſeveral children. She had the misfortune, on returning from Wigan market, to fall from a loaded cart, the wheel of which paſſed over her pelvis as ſhe lay on her back. The injury ſhe ſuffered from this accident made confinement neceſſary for about ſix weeks. She was attended, on this occaſion, by Mr. White of Mancheſter, Mr. Hawarden of Wigan, and ſome others. From inquiry of Mr. Hawarden, I learned that one of the oſſa ilei was fractured, and much injury done to the whole pelvis, particularly to the oſſa

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pubis. The woman being then in great miſery, was very adverſe to an accurate examination; yet the above ſtatement ſeems highly probable, both from an irregularity of feel at this part, and from the elevation of the head of the thigh bone on the left ſide: this produced a ſhortening of the limb, and of courſe a limping.

Soon after her recovery from this injury ſhe became pregnant; and on Friday, November 22d, 1793, ſhe was ſeized with labour pains, being then at the full period of utero-geſtation. The midwife who attended her in her former labours, was ſent for on this occaſion; but having waited with her ſeveral days without the leaſt proſpect of delivery, ſhe thought it adviſeable to have more aſſiſtance, eſpecially as the water was diſcharged on the ſecond day of the labour, and no part of the child could be aſcertained to preſent within reach.

On Tueſday, the 26th I was deſired to meet Mr. Hawarden, of Wigan, upon a conſultation on this caſe; but arriving a

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little before him, I examined the parts per vaginam, and was extremely ſurpriſed to find that I could barely paſs my finger between the oſſa pubis and the laſt lumbar vertebra, ſo great was the narrowneſs at the brim. Beſides this, the outlet was ſo much contracted, that it was with ſome difficulty I could introduce three fingers at that part. After aſking ſome queſtions, I was informed of the accident. This information induced me to repeat my examination with more exactneſs, in order the better to aſcertain the preciſe dimenſions. Having introduced my finger again, I perceived a very evident depreſſion of the oſſa pubis, with a protuberance in a direction ſomewhat more towards the hollow of the ſacrum, than in an exact line with the laſt lumbar vertebra. From this I am led to ſuſpect that there had been, beſides the fracture, a ſeparation at the ſymphyſis pubis, and that the protuberance juſt mentioned was the conſequence of a depoſit of bony matter at the ſeparated part; and ſome idea may be formed of its quantity

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from knowing that it projected to within half an inch of the os ſacrum. With ſome difficulty I carried up my finger ſufficiently high to judge concerning the degree of dilatation of the os uteri, which appeared to be conſiderable, as far as I could judge from feeling its anterior edge, which was thin and flabby; but no part of the child was within reach. Her pains had left her the night before, her anxiety was very great, her pulſe full, and reſpiration difficult. This laſt ſymptom was moderated by the loſs of ten ounces of blood from the arm.

On converſing with Mr. Hawarden, he concurred with me concerning the nature of the caſe, and the impoſſibility of bringing the child away by the natural paſſage. Some little converſation paſſed on the propriety of a diviſion at the ſymphiſis pubis; but it appeared to us both that the narrowneſs at the pubis was too conſiderable to allow much advantage from ſuch an operation; therefore that project was ſoon abandoned. The only alternative then was

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the Cæſarean operation: but the well-known danger of this induced Mr. Hawarden to decline taking any part in it, and he returned home.

Convinced, therefore, of the impoſſibility of effecting delivery by any other means, it was propoſed to her attendants, but was not then aſſented to. Indeed, the idea ſeemed ſo dreadful, that I did not urge it much, eſpecially when I recollected, that of the nine or ten inſtances in which that operation had been performed in this country, not one had furniſhed a voucher of its ſucceſs. In this forlorn and dangerous ſituation ſhe was left to the care of the midwife, and deſired to make up her mind as ſoon as poſſible concerning the operation.

On the morning following I was again ſent for, and found her lingering in the ſame ſituation. She conſented to the operation without the leaſt heſitation. I immediately called in, as an aſſiſtant in the operation, Mr. Hawarden, a practitioner in the village (Blackrod), and brother of

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Mr. Hawarden, of Wigan, before mentioned. The patient being taken out of bed, and placed upon a table, lying on her back with her head raiſed by pillows, I began by making a longitudinal inciſion, five inches and a half in length, as high as the navel, parallel to the linea alba, and about two inches to the left of that line. The integuments and the left rectus muſcle being cut through, a ſmall opening was made through the peritoneum at the upper part, and, by means of a probe-pointed biſtory, this membrane was dilated to the ſame extent as the external parts. The uterus was now expoſed to view, and an inciſion, of the ſame length, was continued through it. The child preſented with its breech, and was extracted through the artificial opening, but unfortunately was dead, yet did not ſhew any material ſigns of putrefaction. The placenta and membranes were then extracted with the greateſt eaſe. The uterus was very thin, ſcarcely exceeding that of the peritoneum, and equally ſo through the whole extent of the

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inciſion. No attempt was made to examine the pelvis from the abdominal wound. The hands of an aſſiſtant were applied on each ſide of the abdomen to prevent the admiſſion of external air, and to preſs out any blood that might be diffuſed among the inteſtines; after which, the ſides of the wound were brought together, and ſecured by ſeven ſutures, over which ſlips of adheſive plaſter were applied, and the dreſſing completed by a few turns of a flannel roller around the body.

The peritoneum was not included in the ſutures, and no part of the viſcera protruded during the operation; neither were there any blood veſſels divided which required to be ſecured by ligature. It was a fortunate circumſtance that no hæmorrhage followed the extraction of the placenta, as was to be apprehended from an atonic condition of the uterus, the effect of long diſtention. The womb contracted properly, the lochia were about the uſual quantity, and continued as in other caſes. The poor woman ſcarcely complained during the operation, ſo great

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was her fortitude. Soon after ſhe was put into bed, ſlept without taking any medicine for that purpoſe, and paſſed a good night. On the 29th ſhe complained of a fulneſs about the region of the ſtomach, with an inclination to vomit; and, on laying my hand on the abdomen, a degree of tenſion was diſtinguiſhable. Her tongue had a whitiſh appearance, and her pulſe about 120. A laxative clyſter was adminiſtered with the deſired effect, and the tenſion of the abdomen with pain, yielded to the ſtimulating effects of a bliſtering plaſter. In ſhort, all the ſymptoms which had before indicated irritation, now ſuffered a very obvious remiſſion. Four days having elapſed ſince the operation, it was thought eligible to remove every other ſuture; on the ſixth the remaining ones were taken away, and the wound appeared healed.

Though ſhe had been a nurſe to her other children, ſhe experienced no uneaſineſs in her breaſts on the preſent occaſion. Her health continued in an improving

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condition until December 4th, when it received ſome interruption for a few days from a diarrhœa, but which was checked by an aſtringent mixture. On the 10th ſhe ventured out of bed; on the 17th ſhe began to attend to her domeſtic employment; from which time to the preſent, September 23d, 1796 (an interval of nearly three years), ſhe has continued in health, menſtruated with regularity, but has never been pregnant.

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X. *A ſingular Caſe in Lithotomy, by* R. B. CHESTON, *M. D. Communicated by* WILLIAM BABINGTON, *M. D.*

THOMAS HOPE, about twenty years of age, was admitted into the Glouceſter Infirmary with a ſtone in perineo, which, for nearly eighteen months, had occaſioned a conſtant and involuntary dribbling of his urine. Upon paſſing a finger up the anus the bladder felt much thickened, and ſeemed likewiſe to contain a ſtone of conſiderable ſize, which it embraced cloſely.

Upon its being determined to attempt the extraction of the ſtone or ſtones, I ordered him into the warm bath three or four times, and particularly about two hours before the intended operation. As I could not paſs the ſound into the bladder, it was my intention to cut upon the ſtone in perineo, and afterwards to introduce the gorget into the bladder by means of a fe-

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male ſtaff; an operation I had once practiſed before with ſucceſs.

When I had cut down on the ſtone in the urethra, with the intention of continuing my inciſion through the neck of the bladder, I found the body of the bladder ſo cloſely contracted upon the ſtone it contained, and of which that in the urethra proved a portion, that I could not introduce the ſtaff, nor even the head of a ſmall probe, between them; and though I made ſeveral gentle as well as powerful efforts to carry my point, I was obliged at laſt to give it up, as abſolutely impracticable. In this ſituation I recollected, that Le Dran had mentioned an inſtance, in which, being unable to extract the ſtone at the time of the operation, he temporiſed, by keeping the wound properly open, and ſucceeded in the extraction of it ſeven weeks afterwards. This I obſerved to the gentlemen who were preſent, and propoſed to adopt the ſame method, in hopes that when a ſuppuration came on in conſequence of the inciſion through the neck of the bladder,

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the degree of contraction might be relaxed, and an opportunity thereby gained of paſſing the gorget for the introduction of the forceps, or that the detruſive power of the bladder might bring forward the ſtone ſo that I could lay hold of it. This ſeeming to all preſent as the moſt reaſonable plan to be purſued, I introduced a piece of gentian root, of a proper ſize, down upon the projecting part of the ſtone, which was afterwards repeated occaſionally, under every proper attention to the ſtate of the external wound. In a few days, however, finding the internal wound to contract more than I could wiſh under the uſe of the gentian root, I ſubſtituted ſome prepared ſponge in its ſtead, and by this means ſucceeded ſo as to keep the opening fully as large as on the day of the operation. It was, however, almoſt three weeks before I perceived any material alteration in the tightneſs of the bladder on the ſtone. On the twenty-firſt day I found a large quantity of thick mucus, ſlightly purulent, upon the dreſſings, and

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introducing my finger, perceived I could, for the first time, give the stone some motion; but it occasioned most exquisite pain in the bladder.

My hopes were now revived, and finding a few days afterwards, that every circumstance seemed going on in the most promising way, that I could with the greatest ease introduce a large button-pointed probe into the bladder, and round the stone, that the stone became more and more moveable, and that the thickness of the bladder seemed considerably reduced, I resolved to watch the proper time, and then attempt the extraction.

On the 8th day of April, five weeks after the first incision was made, the young man being secured on the table as usual for lithotomy, I introduced through the wound, between the stone and bladder, the female staff, and upon it the largest sized cutting gorget, with the greatest ease: but upon attempting to make use of the forceps, I found myself in the same situation as at first, unable to pass them into the bladder

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by any method I could contrive, or to lay hold of any part of the ſtone but at the extremity, which projected into the urethra. Being fearful of this circumſtance, I had provided myſelf with a pair of forceps, made at the joints like thoſe uſed in midwifery, ſo that I might avail myſelf of the means of uſing them by ſingle blades.

This I attempted, and very readily paſſed one of them at the upper ſide under the pubis; but when I endeavoured to introduce the other on the under ſide of the ſtone, I met with an inſuperable reſiſtance, which ſeemed to proceed from the ſpace gained between the ſtone and the bladder being filled up by the blade already made uſe of.

Finding now that there was not the leaſt chance of extracting the ſtone entire, I determined, if poſſible, to bring it away piecemeal; and having already broken off with the forceps ſome of that part which projected into the urethra, I attacked the breach with my ſciſſars paſſed upon my finger, and in a little time found I made a

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conſiderable impreſſion upon the ſtone, which, though hard upon its ſurface, proved to be of a looſe texture within. Proceeding with caution in this manner, I at laſt ſucceeded in completely ſplitting it, and with the forceps, and the nail of my finger, broke the ſtone into ſuch pieces, that I extracted all which could be laid hold of with the forceps, or got out with the ſcoop, and then waſhing away the remainder with the aſſiſtance of a ſyringe, my patient was put to bed in tolerably good ſpirits, after having been upon the table rather more than an hour. Paſſing one finger through the wound, and another up the rectum, I found the coats of the bladder very conſiderably thickened, and the inner ſurface, at different places, to the touch looſe and ſpongy, as though diſpoſed to become fungous.

The pieces of the ſtone, when collected, weighed two ounces; ſo that the thickneſs of the bladder had deceived me very much as to the probable ſize of it; for upon the examination by the rectum, previous to the

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operation, the finger could not reach, even by preſſing ſtrongly, the apparent extremity of the ſtone. From this circumſtance we may conclude the form of it was oblong.

From the day of extracting the ſtone I occaſionally introduced a bit of ſponge tent, that the wound might not cloſe too faſt, and that any remaining particles of ſtone might be waſhed away with the urine, or the bladder relieved, if poſſible, from its apparently deranged ſtate by a free diſcharge of whatever it could get rid of. I likewiſe now and then threw up ſome mel roſæ diluted with water, which, on its return, ſeveral times brought with it ſloughs of different ſize, covered with gravelly particles, bearing the appearance of ſmall ſand ſprinkled over moiſt brown paper.

At the end of three weeks I examined the bladder very carefully with my probe, and not finding the leaſt remains of any unnatural ſubſtance whatever, and the injection having returned nearly in the ſame ſtate it was thrown up, I determined to

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retard the healing no longer, and therefore dreſſed the wound ſuperficially, as uſual in common caſes. As there remained a conſiderable hardneſs around the inciſion, which was continued to the neck of the bladder, I rubbed on ſome mercurial ointment twice every day. From this time the wound went on kindly, and at the end of a fortnight was quite cicatriſed.

About ſeven or eight days afterwards, upon catching cold, he was attacked with a very ſevere cough, in a violent fit of which he felt (as he expreſſed it) the wound crack, and was almoſt immediately ſenſible of the urine oozing through it. By due attention, however, to his cough, and keeping him quiet in bed, this alarming accident was ſoon got over, and he was diſcharged from the Infirmary about three weeks afterwards, perfectly well, without the leaſt uneaſineſs whatever in his bladder; and though ſome of his urine now and then dripped off involuntarily, he in general retained it with the greateſt comfort and eaſe.

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Continuation of the foregoing Case.

About the middle of July, 1780, this unfortunate young man called on me again, complaining of a conſtant and involuntary diſcharge of urine, which had, in the courſe of the two laſt years, gradually become more troubleſome to him; and to leſſen the inconvenience of which, as he was obliged to maintain himſelf by working at his trade as a carpenter, he conſtantly had made uſe of a bladder ſecured around his penis to receive his urine as it dribbled from him. At the ſame time he expreſſed his fears that he had a ſtone in his bladder, as large, according to his feelings, as the former one taken from him.

Not being able to paſs a ſound into the bladder as far as the perineum, I introduced my finger up the rectum, and found a ſtone of a conſiderable ſize in his bladder, which I could trace along the courſe of the urethra, within the ſcrotum, more than an inch; but at the cicatrix of the former

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operation it was to be felt as though it had almoſt worn its way through. As there appeared no chance of giving him the leaſt relief but by the operation, I propoſed it to him, and he readily conſented. I therefore again admitted him into the Infirmary, ordering him into the warm bath three or four times in the courſe of a week, and emptying his bowels with ſolutions of ſoluble tartar and manna, and occaſional clyſters of the emollient kind.

On the 18th of Auguſt he walked up into the theatre, and laid himſelf down on the operating table with the greateſt reſolution and compoſure, ſaying he had rather go through the operation than ſuffer the pain and inconvenience he had for ſome time laboured under.

As the ſtaff could be of no uſe to me, I made my inciſion in the courſe of the old cicatrix, which I found exceedingly hard, indeed almoſt as griſtle, to cut through; the poor fellow at the ſame time crying out that I gave him moſt exquiſite pain.

Having every reaſon to expect that the

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operation muſt be gone through in the ſame manner as on the former occaſion, I made my external inciſion as free as poſſible; uncertain whether the ſtone in the urethra was ſeparate from, or a continuation of that in the bladder. By the free opening I eaſily, with my forceps, laid hold of the ſtone, which ſoon gave way at the neck of the bladder, and I extracted that portion with tolerable eaſe.

I then paſſed the female ſtaff into the bladder, and upon it the cutting gorget, in hopes of introducing the forceps, either connected or ſeparated into different blades, as on the former occaſion; but the contraction of the bladder was again ſo inſurmountable, that I could by no means ſucceed. I therefore with the point of my ſciſſars endeavoured to break its bulk, as in the former operation, and by degrees ſucceeded; ſo that with the ſcoop and forceps, though after much fatigue to myſelf and patient, I cleared the bladder of the whole of it. Anxious, however, to leave no particle behind, I ſyringed the bladder

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by means of the elaſtic vegetable bag, and then dreſſed the wound as uſual. Through the remaining part of the day he was very eaſy and comfortable in every reſpect, paſſed the night with refreſhing ſleep, and appeared the next morning in the moſt promiſing ſtate, all his urine then paſſing through his penis. Towards the evening, as is uſual on the ſubſidence of the inflammation, it began to dribble through the wound again, and by the next morning the whole paſſed off that way.

From this time every circumſtance went on in the moſt pleaſing manner, the urine gradually finding its way through the urethra; ſo that by the 30th of September the wound was entirely healed, and the young man perfectly recovered in every other reſpect, except that his urine ſtill continued to run off at ſome times in the day involuntarily.

Though there was but little proſpect that the neck of the bladder could again recover its proper power, from the manner in which it muſt have been injured by the dilatation

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of the ſtone, as well as the effects of the two operations, I was anxious to give him every chance in my power from medicine, and therefore put him upon a courſe of uva urſi, bark, &c. by which he was ſo far benefited, that he frequently paſſed a day retaining his urine completely. At this time he wiſhed to return to his friends, and was therefore diſcharged from the Infirmary, occaſionally diſtreſſed by an incontinence of urine.

I have been informed that he died about a year afterwards, without any examination being made into the ſtate of the bladder; nor could I learn any particulars of his laſt illneſs.

Several caſes are upon record of bladders contracted on the ſtones they contained, under different terminations. Mr. Pye, an eminent ſurgeon and lithotomiſt at Briſtol, relates a caſe of a patient, thirty-two years of age, from whom he could by no means extract the ſtone.

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"The inciſion," ſays he, "was made, "and I laid hold of the ſtone in leſs than "a minute, but could not move it. Pieces "broke off as broad as a ſhilling, thick as "my finger, and that was all that could "be done: my forceps were all bent, and "I was at laſt forced to give out. He "died that night, and next day was "opened. We found the bladder ſcirrhous, "and very thick, and ſo ſtrongly con-"tracted to the ſtone, that it was with "ſome difficulty diſengaged. There were "ſuch large rugæ in the ſtone, formed by "the contracted bladder, and its own ac-"cretion, that it was impoſſible to be "drawn forth; nor could I, with all my "force, give it the leaſt turn ſo as to looſen "it*." How far a treatment of this patient as in Hope's caſe might have been more ſucceſsful, I leave to the conſideration of others.

It may be ſaid, that from the more

* See Obſervations on the ſeveral Methods of Lithotomy, in a Letter to Dr. Lane, by Samuel Pye, Surgeon, Briſtol. 1724.

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compact texture of the ſtone, a ſimilar attempt might be fruſtrated; poſſibly the difficulties might be thereby increaſed: but as the ſtone muſt be large to require this kind of aſſiſtance, and the larger the ſtone the fairer and firmer the object for being leſſened in the propoſed manner, I ſhould hope it might even then prove ſucceſsful.

In the early ſtate of lithotomy many difficulties occurred from the want of a proper anatomical knowledge of the parts materially concerned in the operation. Hence, as diſappointments, lacerations, and a train of horrid circumſtances, terminating in the death of the patient, frequently happened, the operators of thoſe days were ſometimes led to adopt a palliative method, fully deſcribed by Fiency*, but which will,

* Verum quia omnis extracto calculi eſt valde periculoſa præcipue in ſenibus, &c. &c. ideo aliquis docti invenere aliam rationem ſectionis, qua calculus non extrahitur ſed relinquitur. In hac ſectione fit vulnus uſque ad veſicam, ſed multo minus quam in extractione, et curatur ut vulnus nunquam claudatur

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I think, ſcarcely be repeated in the preſent knowledge of the operation, unleſs under very peculiar circumſtances indeed.

Moderately ſized ſtones have, on ſeveral occaſions, been left by deſign as well as accident, after the operation, till the bladder, putting on a kinder diſpoſition in the one caſe, or in the other bringing forwards the ſtone to the wound by its own detruſive powers, allowed, at the expiration of different diſtances of time, an eaſy extraction of them *.

ſed ut occaleſcant labia ejus, et ſemper maneat apertum ut ſic urina perpetuo fluere poſſit—in labris calloſis non eſt ullus ſenſus, et ſic non fit dolor: antea vero exibat perductum urinarium, et virgam, in qua acutiſſimus eſt ſenſus, et ideo excitabatur immenſus dolor.——Vide Fiency de Sectione, ſine Extractione, Calculi, et quibus conveniat.

This palliative method has been recommended by ſeveral others ſince Fiency, without taking notice of the mere original deſcriber of it.——See Dionis's Treatiſe of Operations; Ingram's Caſes in Surgery.

* The difficulty Le Dran experienced in the inſtance I have above alluded to, aroſe from the ſtone being lodged in the ureter, and having advanced only

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An incident of this kind once happened to myſelf. A boy, from whom I had extracted a ſtone, and whoſe bladder I had carefully ſearched, as uſual, after the operation, complained, about five or ſix days afterwards, of the ſame diſagreeable ſenſations in his bladder, which he had before been ſubject to. The wound did not go on kindly, and I began to be uneaſy about him, when, on the twelfth day, I was ſurpriſed at finding a ſtone offering to paſs at the wound, nearly of the ſame ſize with that I had before taken from him. Upon removing it with a pair of pocket forceps, every thing went on well, till the cure was completed.

one third of an inch into the bladder. The experience of this excellent ſurgeon determined this ſituation of the ſtone from its being laterally fixed, and at a proper diſtance above the aponeurotic fibres which run acroſs from one of the ureters to the other, and which, in thoſe bladders that had ſuffered much from the ſtone, he had frequently remarked to put on a peculiar kind of hardneſs or tenſion.——See Academy of Surgery, Vol. I. on Stones encyſted in the Bladder.

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How far the detention of this ſtone, and its eſcaping my ſearch, might have ariſen from the following circumſtance, I will not pretend to determine. The fact is curious, and I do not recollect ever to have heard it noticed.

Many years ago I cut a boy for the ſtone, which I readily aſcertained on ſearching, and as readily felt on introducing the ſtaff at the time of the operation. After I had completed the inciſion, and paſſed my forceps into the bladder with the hopes of immediately extracting the ſtone, no ſuch ſubſtance could be met with, after a long and careful examination with that inſtrument.

On withdrawing it I introduced my finger into the bladder, and, after ſome time, found the ſtone embedded and ſuſpended in the upper part of the bladder by a fold of its coats, ſo that I could but juſt feel the ſurface of it. On endeavouring to diſlodge it with the point of my nail, I found the ſpaſmodic action of the part gradually to relax, and the ſtone, dropping

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into the cavity, was afterwards extracted with the greateſt eaſe, and the boy recovered as expeditiouſly as could be wiſhed.

Is not a ſimilar circumſtance likely to be miſtaken for an encyſted ſtone? And may not this peculiar ſtate and action of the coats have been brought on by a ſudden depletion of the bladder, when the urine ran off on the introduction of the ſtaff or the paſſing of the gorget; ſtill further promoted by the irritation of theſe inſtruments, and the agitation of the patient in the early part of the operation?

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XI. *Observations on the Cure of Hydrocele by Injection, by* J. R. FARRE, *Surgeon. Communicated by Mr.* ASTLEY COOPER.

DEAR SIR,

As you expreſſed a deſire to have a more detailed account of the caſes of hydrocele of which I lately gave you the mere outline, I have referred to the notes which I made at the time, and here ſubjoin a faithful copy of them, as well as a few reflections which have naturally ſuggeſted themſelves in conſidering the ſubject. I returned to Barbadoes in the beginning of the year 1796, with the intention of ſpending a year with my friends; and whilſt there, employed myſelf in the practice of ſurgery. Struck with the number of thoſe afflicted with hydrocele, and deſirous of proving uſeful to my countrymen, I determined to pay the utmoſt attention to the ſubject. I carefully reviewed all that I had heard, read, or ſeen,

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relative to the different operations for the radical cure of this diſeaſe. I was wavering between the inciſion and ſmall cauſtic, the methods taught and recommended by the teachers under whom I had ſtudied; but being determined to adopt that method which ſhould promiſe to accompliſh its end with the leaſt pain and hazard, I was induced to read over, with greater attention than I had hitherto done, Mr. Earle's treatiſe *. The high eſtimation in which the character of that gentleman is deſervedly held, and his very favourable report, and ſtrong recommendation of the operation of injection, at once determined me to give it a fair trial; and an opportunity ſoon preſented itſelf. The reſult of my experience I proceed to communicate to you, and remain,

&c. &c.

JOHN RICHARD FARRE.

* On the Cure of Hydrocele by Injection.

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CASE I.

A YOUNG gentleman, aged twenty, aſked my advice for what he ſuppoſed to be a diſeaſed teſticle, and of the progreſs of the complaint, he gave me the following account: "That about four or five years ago he ſtruck his ſcrotum againſt the ſaddle whilſt riding, which occaſioned ſevere pain, particularly in the left teſticle; that he ſoon after obſerved an enlargement on that ſide, which gradually increaſed." On examination it proved to be a caſe of pure hydrocele. Notwithſtanding the duration of the diſeaſe, the tunica vaginalis was ſo thin, that on ſtretching the tumour before a lighted candle, it appeared tranſparent. The method of cure by injection was propoſed and acceded to. On the 30th December, 1796, I drew off about ten ounces of a ſtraw coloured fluid, and finding the teſtis in a ſound ſtate, injected ſeven ounces of port-wine and wa-

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ter, in the proportion of two parts of the former to one of the latter. The moment the injection entered the tunica vaginalis he complained of a ſharp burning pain extending into the abdomen, in the courſe of the ſpermatic cord, with ſevere colicky pains acroſs the hypogaſtric region; the acuteneſs of theſe did not diminiſh during the time that the injection was retained, which was preciſely five minutes, and but very ſlowly even after it was evacuated. A bag truſs was applied, and he went to bed. As he was of a delicate and irritable habit, a doſe of laudanum was ordered him, and he was recommended to confine himſelf to a low diet.

In the evening he was perfectly free from pain, which had gradually leſſened for an hour and an half after the operation, and then entirely ceaſed. The teſtis had ſomewhat increaſed, and was tender to the touch, and the ſcrotum was a little inflamed, but his pulſe was 90, and his ſkin quite cool. He paſſed a good night, and the following morning the inflammation had conſiderably

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increaſed, having formed a tumour nearly equal to half the ſize of the hydrocele, with much ſuperficial redneſs, heat, and tenderneſs to the touch. A poultice was applied to the part, and as his bowels were not ſufficiently open, a purging draught was ordered him. On the ſecond morning, about ſeven o'clock, he was ſeized with pain in the teſtis extending up the cord, which continued till nine, when it ſubſided altogether. The tumour appeared larger, but he was ſtill free from fever.

The third day the tunica vaginalis was uniformly diſtended, and the tumour apparently as large as the original hydrocele, but heavier; it continued tender to the touch, but was not otherwiſe painful. The poultice was ordered to be laid aſide during the day, and inſtead of it a diſcutient lotion was applied.

The fourth day, January 3, the ſize of the tumour was the ſame as on the preceding; the tenderneſs and ſuperficial redneſs were leſs.

I had not an opportunity of ſeeing him

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him again until the eighth day, January 7. During my abſence he had been purged, and lived low. He had been obliged to diſcontinue the diſcutient lotion, becauſe it fretted the ſkin. The tumour with regard to ſize was the ſame as when I left it, but the inflammation had declined, and in the courſe of a day or two diſappeared altogether. On the 3d inſt. it regained the form and fluctuating feel of hydrocele, and to my own mortification, and that of my patient, I was aſſured of the reaccumulation of water, which was not only perceptible to the touch, but equally tranſparent as before. I therefore releaſed him from confinement, and adviſed him to uſe a generous diet, and the cort. peruv. to remove the debility which confinement and abſtinence had produced.

Notwithſtanding this diſappointment, he was ſo much pleaſed with the mildneſs of the operation, that he determined on ſubmitting to a ſecond trial of it, in preference to any of the more ſevere methods. For this purpoſe I went prepared on the 17th

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of January; but the tumour being evidently leſs, the operation was delayed, in expectation that abſorption might yet take place; but it decreaſed no further.

Note.—The introduction of this operation into Barbadoes was particularly unfortunate. The firſt attempt ended in the death of the patient. The ſecond, the one before us, failed. The firſt of theſe occurred a few years ago, but it is to be remarked that the operator, though a profeſſional man, had not been regularly educated to ſurgery; and I have been given to underſtand that the ſubject was a very unfavourable one in point of health, and the tumour very large.

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CASE II.

January 24th, 1797. I AGAIN carefully examined the gentleman who was the ſubject of the former caſe. The tumour was not quite ſo large as in the firſt inſtance. The fluctuation was more evident than it had been previous to the operation, becauſe the tunic was leſs tenſe, and equally thin, the inflammation it had ſuffered having produced no ſenſible change. Being fully aſſured of the failure of the operation, I determined to repeat it immediately, as it was my patient's wiſh it ſhould be again performed. I drew off ſix ounces of a ſtraw coloured fluid, and threw in an equal quantity of injection, but made ſtronger than before, viz. three parts of port wine to one of water. He inſtantly complained of ſenſations ſomewhat like thoſe which he had formerly experienced, though by no means ſo acute, and they were accom-

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panied by an universal glow over the part. Having detained the injection ten minutes within the sac, I suffered it to escape, and ten minutes after he was perfectly free from pain. It may be here observed, that the testis was at least double its natural size, and of this enlargement the spermatic cord had also partaken. Inflammation followed so quickly, that by the evening a tumour was formed of half the size of the hydrocele, but assuming the form and feel of the testis; yet, notwithstanding this enlargement, it was scarcely tender to the touch, nor had the integuments surrounding the tunica vaginalis partaken of the inflammation. He had remained free from pain from the period of the operation, and his pulse was calm and regular.

On the following morning, the 25th, I found the tumour as large as the hydrocele, but considerably harder and heavier, and the integuments, though still loose, had some superficial redness. He informed me that the preceding evening, at

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ten o'clock, he had been ſeized with a darting pain in the teſticle, accompanied by a ſenſe of tightneſs, which continued ſeveral hours; that in the morning it had returned with leſs violence, attended, however, by an obtuſe pain acroſs the pubes, and extending in the direction of the ſpermatic cord. His pulſe was ſlightly quickened. On the evening of the 25th the tumour was even larger than the hydrocele, the inflammation having ſpread over the integuments, which were diſtended and red, and the part was tender to the touch in every direction. He had frequent return of the pains which he had felt in the morning, and to theſe was added a ſenſe of wearineſs acroſs the hips. He alſo complained of ſome obſtruction to the paſſage of his urine. His pulſe was 90, but he had no other feveriſh ſymptoms. An enema was ordered to be injected immediately; a ſaline draught with tinct. opii gutt. xxv. to be taken, and a large emollient poultice to be applied to the part.

By the uſe of the enema a large evacua-

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tion was procured, after which he made water without difficulty, in the courſe of half an hour was free from pain, and having taken the anodyne draught, he paſſed an undiſturbed night. The next morning, the 26th, the ſize of the tumour was the ſame as on the preceding day, hard and weighty, but painful only when handled, and whatever part of the ſurface was touched, gave him the peculiar ſenſation of a compreſſed teſticle; the integuments were rather looſer. The application of the poultice had abated the ſuperficial inflammation, and it was ordered to be laid aſide. As he was free from fever, I ſuffered him to riſe, for I was not very ſolicitous about the ſpeedy reduction of the local inflammation, being diſpoſed to attribute my former failure to anxiety of this kind.

I ſaw him again in the evening of the ſame day. He had no return of pain, but complained of a ſenſe of weight in the tumour, which was of a very irregular ſhape, being nearly as large at the upper as at the

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lower part, and having ſeveral projections laterally, all which appeared to be external to the tunica vaginalis. His pulſe was ſlightly quickened; there was ſome heat on his ſkin, and he complained of headach. The enema and anodyne draught, with ſp. ether. nitros. 3i. were ordered to be repeated.

He paſſed a good night, and on the morning of the 27th was free from pain; his pulſe was natural; the tumour of the teſtis had not diminiſhed, but the inflammation of the integuments was conſiderably abated; they were in a relaxed ſtate, except that ſome irregularities appeared, occaſioned by the effuſion of a gelatinous ſubſtance in the cellular membrane. He was again permitted to ſit up, but adviſed to confine himſelf to his chamber.

On the 28th the tumour was leſs, but ſtill tender to the touch, and the integuments nearly in a natural ſtate.

On the 29th it was ſtill more diminiſhed, leſs weighty, and leſs tender to the touch. At its upper and lower parts,

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particularly the former, a ſolid body could be diſtinctly felt, but the central and anterior part had an obſcure tranſparency and fluctuation.

On the 30th the tumour was ſtationary. As the inflammation had altogether ceaſed, I recommended him to bathe in the ſea every morning, with a view of exciting the ſcrotum to contract.

I made up my mind to the expectation of a ſecond failure, for it appeared that the adheſive proceſs had been partial; I was therefore determined to have recourſe to the knife, as ſoon as the effects of theſe repeated inflammations ſhould have worn off.

He called on me at the end of a week after this period, and I was as much delighted as ſurpriſed to find that the ſize of the tumour had diminiſhed; it ſtill had, however, a ſuſpicious appearance, but from this time it daily decreaſed, till, about the latter end of the fourth, or beginning of the fifth week, the teſtis, and that only, could be diſtinctly

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felt, although enlarged to three times its natural ſize.

The latter end of April, 1797, I carefully examined the part, and had the ſatisfaction of finding the teſtis much reduced, and its tunic perfectly free from the ſmalleſt accumulation of water.

Note.—It has been above remarked, that as ſoon as the inflammation had diſappeared, ſo that the tumour could bear free examination, a ſolid body was diſtinctly felt at its ſuperior and inferior parts, but that anteriorly it had reſumed the globular form and fluctuating feel of hydrocele. Whether this was really a deception, occaſioned by an accumulation of the ſame nature as that which it has been remarked took place in the cells of the ſcrotum, or whether it was merely an effuſion of ſerum, I will not take upon me to determine; but this I know, that ſo obvious to my touch was the ſenſation of a fluid, that I ſhould not have heſitated a moment about paſſing my trocar into the tumour had ſuch an operation been thought neceſſary to the radical cure.

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CASE III.

In the latter end of January, 1797, I was requeſted by a medical gentleman of Bridge-Town to examine a mulatto man who had an enlargement of the ſcrotum. On the right ſide I found a hydrocele. On the left there was a tumour of the ſame ſize and form, but which left ſome doubt on the mind from its hardneſs, and great tenderneſs; but the ſmoothneſs of its ſurface, and more eſpecially its form, induced me to think it hydrocele. The tunic was ſo thick and hard that there was no fluctuation, and I concluded the teſticle to be ſomewhat enlarged from the great tenderneſs of the tumour, and from the diſeaſe on that ſide having originally proceeded from violence. For the appearance of the other he could not account.

I propoſed to perform the radical cure by

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injection, if after drawing off the water the teſtes ſhould be found in a fit ſtate for ſuch an operation. This was agreed upon.

A few days afterwards, in the preſence of ſeveral medical gentlemen, I paſſed a trocar into the right tumour, and evacuated about twelve ounces of a light coloured ſerum, and finding the teſtis perfectly ſound, diſtended the ſac with an injection, compoſed of two parts of port wine and one of a ſtrong decoction of red roſe leaves, which was injected in a tepid ſtate. He immediately complained of moſt excruciating pain in the teſtis, ſpermatic cord, and abdomen, the ſeverity of which made him ſweat profuſely. The injection was kept in the ſac eight minutes, and after the evacuation of it the pain moderated a little.

I now again more carefully examined the left tumour, as did the other medical gentlemen preſent; and though we could not determine with the ſame preciſion in this as in the former caſe, yet we all judged it to be hydrocele. I introduced the trocar about the middle of the anterior part of the

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ſwelling, and paſſed it obliquely upwards to avoid injuring the teſticle; but on withdrawing the inſtrument, to the ſurpriſe of us all, only a drop or two of a bloody ſerum followed. He went to bed, was ordered to take a purge, to confine himſelf for ſome days to a low diet, and a poultice was applied over the left ſide of the ſcrotum.

In the evening he was free from pain, which had gradually diminiſhed after I left him. The part was already ſwelled, and tender to the touch, but he had no feveriſh ſymptoms, nor had the ſmalleſt inflammation taken place on that ſide on which I had made the puncture only. An opiate was ordered him.

I ſaw him from day to day, and he went on as well as I could wiſh. The inflammation on the injected ſide increaſed in a gradual manner till the tumour had nearly regained its original ſize, when it ſubſided, and the latter remaining ſtationary, upon the ſeventh day I permitted him to leave his

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bed. During his confinement he had neither pain nor fever, nor did any inconvenience reſult from my having punctured the left tumour.

He muſt have made an improper uſe of the liberty I gave him, for in the courſe of five or ſix days a freſh inflammation took place, even to a greater degree than before. The tumour became exquiſitely tender to the touch, and pains frequently darted through it, extending in the courſe of the ſpermatic cord. By confining him to his bed, purging him, applying an emollient poultice to the part, and giving an anodyne at night, this freſh inflammation ſubſided in a few days, and the tumour began again to diminiſh, though very gradually. The ſwelling on the left ſide remaining in the ſame indolent ſtate, and of the ſame ſize as before, I was ſtill perſuaded that it was hydrocele; and it appeared to me that I had been foiled by the thickneſs of the tunica vaginalis, the trocar, which was purpoſely entered very obliquely, not having pierced through it. I therefore propoſed to make

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a ſmall opening with a lancet as ſoon as I could do it with propriety, to ſatisfy myſelf with regard to its nature; however, about this time, and ſhortly after, I became profeſſionally engaged in a different part of the iſland, that I had it not in my power to fulfil my intention, nor did I even ſee him again till the 5th of May, when, on a careful examination, I was greatly pleaſed at finding the diſeaſe radically cured on the right ſide, though the teſticle was ſtill larger than it ſhould be, and ſurpriſed to obſerve the left tumour ſcarcely a third of its original ſize; not retaining even the form of hydrocele, and diſcovering to the touch nothing more than an enlarged teſticle rather irregular in its figure, but not painful.

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CASE IV.

In February, 1797, I was applied to by a young gentleman to cure him of a hydrocele. Although the diſeaſe had exiſted a conſiderable time, it was yet very ſmall, and the tunica vaginalis ſo thin, that it was perfectly tranſparent when held againſt a ſtrong light. The ſhape of the tumour was peculiar, broad above, and terminated below in a point, probably occaſioned by the preſſure of the tight breeches which he wore, for he had not accuſtomed himſelf to the uſe of a ſuſpender. He preferred the mode of operation by injection: the character of its mildneſs, given by the firſt gentleman on whom I had performed it, induced him to give it a trial.

On the 20th of February, in the preſence of ſeveral medical and other gentlemen, I let out from the tumour between three and

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four ounces of a very light coloured ſerum, and injected in its ſtead three parts of wine diluted with one of water. Inſtead of the ſevere pain which my former patients had complained of, he ſpoke only of an uneaſy ſenſation in the teſtis, and acroſs the pubes. This ſubſided on the emptying of the ſac, which was done in ſeven minutes.

I had it not in my power to viſit him again till the evening of the following day, when I was very happy to find every thing to my mind. He had ſlept well the preceding night, and was altogether free from pain and fever. Inflammation had taken place externally and internally over the tunica vaginalis, and had produced a tumour equal to half the ſize of the original one, yet preſerving the form and feel of an enlarged teſtis, and very tender to the touch. The inflammation gradually increaſed till the tumour became larger than the hydrocele. It entirely diſappeared about the tenth day, and I then releaſed him from confinement, recommending him to bathe in the ſea every morning. I examin-

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ed him from time to time, but the diminution of the tumour was ſo gradual, that I could not pronounce the cure radical until four weeks had elapſed, and even then the teſtis was above twice its natural ſize.

The latter end of April I examined him for the laſt time, and there was not the ſmalleſt appearance of any reaccumulation of water, but the teſtis ſtill remained larger than natural.

CASE V.

I WAS conſulted by a medical gentleman of great reſpectability on account of a hydrocele of the right tunica vaginalis, which had been gradually forming during ſix years, and which had now attained to a very inconvenient ſize. On inquiring reſpecting

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its origin, he informed me "that, ſome conſiderable time previous to its firſt appearance, he ſtruck the teſtis of the ſide affected againſt the pommel of his ſaddle, which produced ſo much pain and inflammation as to render confinement neceſſary, and from this period he was frequently affected with painful enlargements of that teſtis, which were quickly relieved by a mild antiphlogiſtic treatment and bag truſs, but that after theſe repeated attacks of inflammation, an accumulation of water gradually took place."

The tumour had aſſumed a ſhape directly oppoſite to that which is common in hydrocele, its broadeſt part being upward, riſing to the abdominal ring, whilſt its inferior part was ſmall: it had moulded itſelf to the ſhape of the truſs which he had worn ſoon after the firſt appearance of the diſeaſe. On drawing down the tumour the cord could be felt; the fluctuating feel was very evident, and the traſparency of the fluid unuſually obvious, owing to the remarkable thinneſs of the inveſting membrane.

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This gentleman having duly conſidered the different methods of cure, to which he was fully equal from his medical knowledge, gave the preference to that by injection.

March 28th, 1797, I drew off thirteen ounces of a deep citron coloured ſerum, and finding the teſtis ſcarcely larger than the other, injected into the ſac an equal quantity of port wine diluted in the proportion of three parts to one of water. He inſtantly complained of violent pain in the ſcrotum and teſtis, extending up the ſpermatic cord to the loins, accompanied by colicky pains in the lower region of the belly, together with an uneaſy ſenſation in the rectum. After having kept the injection in the ſac ſix minutes, during which time there was no abatement of pain, I let it out, withdrew the cannula, and immediately the ſcrotum contracted around the teſtis. The pain during the operation was ſo acute, that his countenance, naturally florid, became quite pale; his pulſe beat languidly, a cold ſweat hung on his

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forehead, and he was reduced almoſt to a ſtate of ſyncope. He ſuffered more than I had hitherto ſeen any one from the operation, and his conſtitution being a very irritable one, I gave him immediately tinct. opii, gutt. xl. in a glaſs of wine. I remained with him two hours, during which time the pain gradually abated, and ſhortly after entirely left him; but he complained of a ſoreneſs of the ſcrotum, and in the courſe of the ſpermatic cord, when the part was touched.

In the evening he was free from pain, except an occaſional darting in the ſpermatic cord. The opiate, although it had not procured ſleep, produced a pleaſing compoſure for ſeveral hours. The ſcrotum was ſlightly inflamed, and the teſtis, though but little enlarged, was very tender to the touch: he had frequently felt over the part a glow rather agreeable than otherwiſe.

He paſſed a good night, and the ſecond day did not complain of pain unleſs the tumour was meddled with, and then the ſlighteſt touch proved exquiſitely painful;

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the ſwelling had moderately increaſed, and it was much more weighty than the hydrocele, though not a fourth part ſo large. He was recommended to confine himſelf to a low diet, and to ſupport the part. In the courſe of the evening he felt ſome darting pains in the ſpermatic cord, returning at intervals, and his pulſe was quicker than natural: however, he ſlept well during the enſuing night without an opiate. The third day he had occaſional flushing in the face, and his pulſe continued quicker than natural, but he had neither heat on the ſkin, nor thirſt. The tumour had enlarged to nearly half its original ſize, felt weighty and ſolid, and was ſtill exquiſitely tender to the touch; but the inflammation not being greater than it ought, I did not chooſe to reduce it by local applications and purging: his bowels were ſufficiently open, and had been ſo from the time of the operation.

The fourth day his pulſe and ſkin were in a natural ſtate. The ſize of the tumour was the ſame as on the preceding day, and

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free from pain unleſs handled, which, though done in the gentleſt manner, gave him pain.

The fifth day, April 1ſt, the tumour had not diminiſhed, though the inflammation was conſiderably leſs: indeed, my patient felt himſelf ſo free from pain, that he would no longer ſubmit to confinement; but he complained of coldneſs of the extremities with clammy ſweats, occaſional fluſhing of the face, and great languor, which being apparently produced by abſtinence, he was permitted to return to his full diet and wine; took the decoct. cinchonæ, and occaſionally a doſe of muſk.

The ſixth day the ſize of the tumour had not perceptibly leſſened; the ſuperficial inflammation was gone, but the teſtis remained too tender to bear a proper examination.

In a few days the tenderneſs left the tumour, ſo that I could freely examine it; it had loſt conſiderably of its weight, and with much regret I obſerved that it had both the form and feel of water; how-

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ever, conſidering that the inflammation had been very great, and that ſince it had ſubſided, ſome diminution in the ſize of the tumour had taken place, I yet had hope that the operation would have ſucceeded; but I met with a ſevere diſappointment, for I finally examined it in the beginning of May, five weeks after the operation, and was too well convinced of its failure. The ſize of the tumour was indeed conſiderably reduced, but it had remained ſtationary for the laſt fortnight, and had all the marks of a true hydrocele.

I have lately received a letter from Barbadoes, written a few weeks after my departure from that iſland, by which I am informed that this gentleman ſtill entertained a hope of obtaining a radical cure; hence I judge that the ſize of the tumour has diminiſhed ſince I ſaw him. I will take the liberty of communicating the event hereafter; and ſhould abſorption have taken place, contrary to expectation, it would ſeem that this operation in effecting a cure does not always obliterate the cavity of the tunica vaginalis.

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CASE VI.

In the beginning of December 1796 a young gentleman desired me to tap a hydrocele. He informed me that about a twelvemonth before he had taken cold in consequence of having been exposed to a shower of rain, and was seized with an inflammation of the testicle, which left the gland enlarged, and an accumulation of water gradually followed. On examination I found the tumour (which had been stationary for many months) very small, such indeed as most men would have borne, rather than undergo any operation, but he wished much for a radical cure. I cautiously pierced the anterior part of the tumour, and evacuated two ounces of a very light coloured serum. The testis was enlarged, but perfectly sound. He called on me the fourth day afterwards, and I saw the marks of disappointment in his countenance; in truth, the water had accu-

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mulated so quickly that the sac was now as full as ever. It being apparently a very favourable case for the operation of injection, as the tumour was small, and the tunic very thin, I would have performed it immediately, but he was so situated that he could not then submit to the necessary confinement. Some months afterwards he was desirous of having the operation performed, which was done on the afternoon of the fourth of April 1797. Having drawn off of a light straw-coloured fluid, in quantity between two and three ounces, I found the testis not quite so much enlarged as when the palliative operation was performed. I distended the sac with a mild injection composed of two parts of wine and one of water, and he immediately complained of much pain in the testis and spermatic cord, extending to the loins, and passing across the pubes; and I could plainly perceive that he suffered more than he expressed by words. The injection was withdrawn in five minutes, but he continued to feel a great deal of pain; which, however,

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gradually abated, and at eight o'clock in the evening, when I viſited him, he was free from it, but the part was tender to the touch.

By the next morning, April 5th, a gentle enlargement of the parts had taken place, but they were not ſo exquiſitely ſenſible to the touch as has been noted in ſome of the preceding caſes. The ſcrotum had reddened, and felt warmer than uſual. He was requeſted to confine himſelf to bed, and to live low. In the evening he was much the ſame, except a little complaint of his cheſt, to which he is occaſionally ſubject, and which had quickened his pulſe, but not ſo much as to require medicine.

By the 7th of April the tumour was as large as the hydrocele, but felt weighty and ſolid; the ſuperficial inflammation had diſappeared, and the tenderneſs was much leſs. I thought it no longer neceſſary to confine him, but adviſed caution for a few days. The inflammation had been ſo gentle that I hardly dared to hope for ſucceſs, and yet the feel of the

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tumour was juſt what I wiſhed. I had not an opportunity of again examining the part for two or three weeks, and then to my regret I found that the operation had failed. He informed me, that as the enlargement of the teſtis ſubſided, which it began to do in a day or two after the laſt time of my ſeeing him, the ſoft fluctuating feel, together with the globular form, returned, and in a very ſhort time the water had accumulated to the ſame quantity as before. The tunica vaginalis had not undergone the leaſt change from the inflammation, being ſtill thin and tranſparent. Notwitſtanding this diſappointment, he determined to ſubmit to a ſecond trial of the operation as ſoon as poſſible.

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CASE VII.

Mr. —— applied to me to cure him of a hydrocele. He is a middle aged man, of florid complexion, and ſubject to attacks of the glandular diſeaſe of Barbadoes, which had produced an enlargement of the leg; and, as perſons afflicted with this diſeaſe are in general of very irritable conſtitutions, he was not the moſt favourable ſubject for a ſurgical operation. The hiſtory he gave me of his caſe was as follows: "That ſeveral years ago he perceived an enlargement of the right ſide of the ſcrotum, which gradually increaſed to a conſiderable ſize; that he daily uſed the cold bath for two or three months with a view of checking its progreſs, but finding it had not that effect, he had diſcontinued it, and only wore a ſuſpender. Some time after this he obſerved that the tumour was decreaſing, which it continued to do till he

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felt the teſticle of its original ſize. From its commencement to its final diſappearance fifteen months had elapſed. He had not long eſcaped from this diſeaſe on the right ſide before he diſcovered a fulneſs on the left, which increaſed, and at length growing troubleſome from its ſize, he had the fluid drawn off, and that operation ſoon became neceſſary a ſecond time. The tunica vaginalis was now a third time very much diſtended, and having heard of the mildneſs of the operation of injection, he wiſhed to obtain by it a radical cure; and indeed I muſt confeſs that I would not have ventured to perform on him any other operation." He was recommended to live temperately for a few days, and to keep his bowels ſoluble; this having been attended to, the operation was performed on the tenth of April 1797. I evacuated a quart of a high coloured ſerum, and finding the teſtis but ſlightly enlarged, injected above half a pint of wine and water (three parts of the former to one of the latter); obſerving that he did not complain, I

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threw up the ſame quantity of wine undiluted, and then continued to uſe the injection in the former proportion until I had diſtended the ſac, in which I detained it eight minutes, without much inconvenience, for the patient expreſſed only a ſlight pain in the teſtis, and ſome little uneaſineſs acroſs the pubes. Having withdrawn the injection and cannula, the ſcrotum contracted cloſely around the teſtis. He complained of being languid and faint, but he was quickly revived by a glaſs of wine. He was recommended to live low, and by way of precaution to take at night an anodyne combined with an antimonial, this compound having been, by long eſtabliſhed experience, found to be the beſt medicine in an attack of the glandular diſeaſe; of which there was ſome reaſon to be apprehenſive, ſince the ſlighteſt puncture, even the mere fretting of the cutis by the removal of a chigor, (a kind of flea which enters under the cuticle) will frequently give riſe to this diſeaſe in perſons who are diſpoſed to it.

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The next day I found the teſtis enlarged, and tender to the touch; the ſcrotum very florid, but not turgid; I could feel all the parts of the teſticle very perfectly; and he had remained free from pain and fever. He informed me, that on the preceding night he had found ſo little uneaſineſs in the part, that he was fearful inflammation would not take place, the ſmalleſt appearance of which he did not perceive until the morning. The draught did not agree with him, rather having prevented than procured ſleep; it was therefore ordered to be omitted.

I did not ſee him again till the 13th, when to my great ſurpriſe I obſerved that the inflammation had diſappeared; the ſcrotum being free from redneſs, and tightly corrugated about the teſtis, which, though ſtill much enlarged, was ſcarcely tender to the touch. He told me that the inflammation had left the part during the preceding night. He was allowed to return to his former diet, and to leave his bed, but was

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requested to confine himself to a sitting posture.

I saw him again on the 15th, and was not less surprised at finding a return of inflammation. I perceived by his straddling walk that the part was very uneasy to him, and on examination observed that there was much more tumefaction, and greater tenderness to the touch, than had appeared in the beginning; and he also felt at times a little darting in the testis and spermatic cord. The skin to the circumference of half a crown around the puncture was excoriated, and a thin serum was discharged at the orifice. Fortunately this fresh accession, brought on by an imprudent use of the liberty granted him, was not accompanied by fever. He was desired to go to bed immediately, to live low, and to apply to the scrotum folds of linen kept constantly wet with an anodyne and saturnine lotion, and some medicine to open his bowels was ordered for him. By these means the inflammation disappeared in the course of a few days, but to my great mortification

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left a tumour containing a pint or more of fluid. He would have ſubmitted to a repetition of the operation, but my ſtay in the country, which did not exceed ten days after I had aſcertained this failure, was too ſhort to undertake it.

Note.—Having had occaſion to mention the glandular diſeaſe of Barbadoes, (ſo named by the late Doctor Hendy of that iſland, author of a treatiſe on this ſubject) it may not be improper to obſerve, that it is one which peculiarly affects the lymphatic ſyſtem, occaſioning an inflammation in one or more of the lymphatic veſſels and their correſponding gland. The diſeaſe attacks the extremities, and is generally followed or accompanied by conſiderable fever, ſucceeding to ſtrong rigors, and terminated by ſweating; hence the diſeaſe is diſtinguiſhed by the inhabitants in general by the appellation of fever and ague, though differing altogether in its nature from the intermittent produced by the miaſmata of marſhy places. Now and then it attacks the teſtis, and ſometimes occaſions a glary

depoſit in the cells of the ſcrotum, producing a laſting and unſeemly deformity of this part; and it is not improbable but that theſe inflammatory attacks of the teſticle may give riſe to hydrocele.

CASE VIII.

In the latter end of Auguſt 1796 I was ſent for by a young gentleman who had a double hydrocele. He wiſhed for the preſent to be relieved of the load and deformity of theſe tumours by the palliative operation, having made up his mind to ſubmit to an operation for the radical cure at ſome future period.

On the right ſide was an hydrocele of the ſpermatic cord, oblong in its figure, the tunic not tenſe, and though thick, admit-

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ting the rays of light obſcurely through it. I pierced it with a trocar, and evacuated a pint and an half of ſerum. On the left ſide was an hydrocele of the tunica vaginalis, which I emptied of a few ounces of ſerum. The diſeaſe on the left ſide had appeared about a twelvemonth before, but on the other it was of four years ſtanding. The ſacs gradually filled after tapping, and when diſtended, ſo as to become inconvenient, he again ſent for me. The left tumour was much larger than before, but the right was not ſo much diſtended: its ſhape was more irregular, and its tunic much thicker.

April 12th, 1797, the operation by injection was performed on both ſides. From the right tumour I evacuated above a pint of high coloured ſerum, and threw in ſeveral ounces of an injection made of three parts of wine and one of water: but the part not ſhewing ſo much ſenſibility as I wiſhed, a ſyringe full of wine (about three ounces) was injected, and then the fluid of its former ſtrength, until the ſac was

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completely filled. He presently complained of violent pains in the lower region of the belly, far more intolerable than the uneasiness felt in the part; these rather increasing than diminishing, I emptied the sac, after having retained the injection in it seven or eight minutes. I shortly after passed the trocar into the left hydrocele, evacuated about ten ounces of a lighter coloured serum, and distended the sac with a weaker injection, viz. two parts of wine to one of water. On this addition, to his former pain, which was yet undimished, he complained severely; I therefore, in the course of four or five minutes, let out the injection, yet he continued to express as much pain as before, and was seized with nausea and vomiting. The pain returned by fits, and he tossed from one side of the bed to the other; his pulse was languid, cold sweats hung upon his forehead, and he expressed much anxiety and apprehension. I gave him tinct. opii, gt. xxxv.

In the evening he was free from pain,

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which had gradually abated in two hours after the operation. There was a diſpoſition in the parts to inflammation; his pulſe was very quick (about 110), he complained of dryneſs of the mouth, and flushing of the face, alternating with clammy ſweats; but the two laſt ſymptoms he had been ſubject to for many weeks; indeed, ſince an attack of the glandular diſeaſe, which had terminated in abſceſs on the leg in January laſt. A ſaline anodyne draught was ordered for him, and he paſſed a pretty good night.

The ſecond day his pulſe continued very quick, with occaſionally a dry ſkin, and ſometimes a clammy one. A very gentle inflammation had taken place on both ſides of the ſcrotum within the ſacs, but the tumour on the right ſide was larger than on the left. Both were free from pain, nor were they ſo tender to the touch but that they could bear gentle handling; of the two the left was the moſt ſenſible. The integuments were not at all inflamed, being

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relaxed and flabby. A decoction of bark was ordered for him.

In the evening he was much the ſame, except that he complained of difficulty in paſſing his urine, which he had done in a leſs degree from the time of the operation. An enema was ordered to be injected. He thought that the bark heated him; it was therefore omitted, and the ſaline draughts continued.

The third day his pulſe was leſs frequent, but ſtill more ſo than natural. He made water with leſs difficulty. The double tumour of the ſcrotum was gradually increaſing with gentle tenderneſs to the touch, but there was no inflammation external to the tunics. In the evening he was ſeized with great languor, and frequent ſtarting; but at length fell aſleep, and paſſed a tolerable night.

The fourth day his pulſe was quicker than natural, yet languid. He complained of being very weak, and of uneaſineſs in his ſtomach. The tumours of the ſcrotum were

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ſtationary, the ſkin ſtill uninflamed, looſe, and flabby. He was ordered to take freely of a decoction of bark, together with a liberal uſe of wine and animal food.

The fifth day he was quite free from any preternatural quickneſs of pulſe, but ſtill complained of great languor. He was no longer ſenſible of any obſtruction to the paſſage of his urine. The tumours, though leſs tender to the touch, had not diminiſhed in ſize.

From this time the inflammation, which had all along been more moderate than I wiſhed, quickly declined and diſappeared. The left tumour daily decreaſed, and before three weeks had elapſed, the teſtis could be diſtinctly felt very little larger than natural; but with regard to the right tumour, it remained of the ſame ſize as during the inflammatory ſtage, viz. about one fourth as large as the original hydrocele. It had a ſoft fluctuating feel, and the teſticle could be plainly felt below it: in ſhort, the operation had ſucceeded in the hydrocele of the tunica vaginalis, but had failed in that of

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the ſpermatic cord. By the uſe of bark and wine he quickly recovered from the languor and debility conſequent on the operation. He would have ſubmitted to another trial of the operation, but my ſtay in the iſland was ſo limited that I could not undertake it.

CASE IX.

A GENTLEMAN, young and healthy, applied to me to cure him of a hydrocele by the operation of injection. The diſeaſe had exiſted ſix or ſeven years, and had been ſupported ſo long through terror of the ſeveral operations which ſurgery propoſes for its relief; nor had he come forward now but for the eſtabliſhed character of the mildneſs of the operation in queſtion, which it had ob-

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tained by one conſent from all who had ſubmitted to it, whether it had failed or ſucceeded.

The hydrocele was large and very irregular, flattened above and below, and long from ſide to ſide. Some parts of the tunica vaginalis were very much thickened, and ſo hard as to make it doubtful whether the teſticle was diſeaſed or not, while other parts of it were very thin and ſoft, readily permitting the paſſage of the rays of light.

April 18, 1797, I tapped the tumour, evacuated a full pint of ſerum, and found the teſticle in a healthy ſtate, although ſomewhat enlarged. Having prepared the injection of a moderate ſtrength, viz. two parts to one, I diſtended the ſac with a ſufficient quantity of it. He inſtantly complained of pain in the teſticle and ſpermatic cord, and alſo of a violent but intermittent colicky pain acroſs the pubes, and its ſeverity did not diminiſh for the ſpace of an hour after the ſac was emptied. I gave him a doſe of laudanum, and left him, deſiring him to lay quiet, to ſupport the parts, and to live low.

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The following day I found him free from pain, which had gone off in two or three hours after I left him. A good deal of inflammation had taken place on the ſcrotum, both externally and internally, and had formed a hard tumour, very tender to the touch. This inflammation gradually increaſed till the fourth day, without pain or fever, and the tumour ſwelled to about half its original ſize, and was very hard and weighty; after which it began to ſubſide, but the tenderneſs had not left it when I laſt ſaw him, which was a fortnight after the operation, and a few days only before I left Barbadoes. The diminution in the tumour was then ſo inconſiderable that I could not poſitively determine whether the operation had ſucceeded or not.

In performing the operation on the ſubject of the above caſe, I muſt have paſſed the trocar through a pretty large vein, for on withdrawing the cannula the orifice bled freely, and continued to do ſo, until I preſſed that portion of ſcrotum very tightly between my fingers for ſome time, after which it gave no further trouble. I notice

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this circumſtance, becauſe it is the only inconvenience which has ever reſulted to me from the uſe of the common ſmall flat trocar, an inſtrument I am partial to, becauſe it has always enabled me to perform the operation with admirable eaſe both to my patient and myſelf. The cannula belonging to the trocar which I uſe is reduced to the thinneſt edge poſſible, ſo that it does not occaſion any perceptible reſiſtance to the entrance of the inſtrument, which paſſes in with the eaſe of a common lancet.

I cannot yet ſpeak poſitively as to the final reſult of the above caſe, but I have lately been informed, by a letter written a ſhort time after I left the iſland, that he expected to obtain a radical cure.

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CASE X.

April 24, 1797. I REPEATED the operation on the gentleman who was the subject of case the sixth. As the injection mixed in the proportion directed by Mr. Earle had failed in the first instance, I was determined to use wine undiluted, if on trial he should easily bear it. I passed in the trocar very obliquely about the middle of the anterior part of the tumour, to avoid the testis, which I could plainly feel enlarged; and having drawn off pretty nearly the same quantity of a very light coloured serum, as in the former operation, I immediately distended the sac with port wine, which caused a glow over the part, and he complained of a slight pain in the testicle and spermatic cord, but so inconsiderable that his countenance did not change. I withdrew the injection in five minutes, but fearful that the stimulus had not been sufficient, I again injected a fresh portion

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of wine, and kept it in the ſac five minutes longer. In the courſe of ten minutes after I had emptied the ſac a ſecond time, all pain ceaſed, ſo that he ſuffered conſiderably leſs from the ſecond than from the firſt operation. He was adviſed to keep in bed, and to live low.

I was prevented from ſeeing him again that day, but very early the next morning I received a note from him, requeſting me to come to his relief, as he was in moſt excruciating pain. I went immediately, and found him ſuffering under that intolerable pain which the unyielding nature of the albuginea cauſes in inflammation of the teſtis. He ſaid that he had paſſed the former day well, and felt himſelf ſo free from pain in the evening, that he was induced to leave his bed, ſit at the table, and to partake of ſupper; that he ſoon returned to his bed, and fell aſleep, but paſt midnight was diſturbed by the ſevereſt pain which he ever felt, and which ſtill continued with undiminiſhed violence. The ſpermatic proceſs was equally affected with the teſticle, and the pain extended to the loins; the

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tumour of the teſtis was much larger than the original one, of a ſtony hardneſs, and exquiſitely tender to the touch. The violence of the pain produced a catching in his breathing; his pulſe was above 100, and he complained of fluſhing of his face, and of a burning ſenſation in his eyes. I immediately had the tumour immerſed in warm water, and afterwards a large emollient poultice applied with aq. lytharg. acet. gutt. xl. and tinct. opii ℥ſs. He was deſired to take ℥iſs. natr. vitriolat. and after it had done operating tinct. opii gutt. xxx.

In the afternoon I ſaw him again; his ſtomach had rejected the greater part of the purge, and the act of vomiting procured him momentary eaſe; it notwithſtanding evacuated his bowels very freely, after which he took his anodyne draught; but not obtaining from this any alleviation of pain, he repeated it in the courſe of an hour or two, and he now felt ſome ſmall relief. The tumour was again immerſed in warm water, and a freſh poultice applied. He was adviſed to repeat his anodyne during the night if neceſſary. The third morn-

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ing he was much worſe. He had paſſed a wretched night; the pain he ſuffered had altogether deprived him of ſleep, although he took ſixty drops of laudanum in addition to the ſixty which he had taken in the afternoon. He now complained of excruciating pain in the teſtis, with frequent dartings through it and the ſpermatic cord, accompanied by violent pain in the ſmall of his back, and all theſe were aggravated by the great reſtleſſneſs which was their natural conſequence. His pulſe was 108, his face was fluſhed, and his head ached. The tumour had ſwelled to twice the ſize of the hydrocele; the ſkin was more tenſe and inflamed than on the preceding day, and the ſuperficial veins were turgid. I opened one of them with the point of my lancet, the blood jetted out in a ſtream, and about the quantity of three ounces was obtained; it then ceaſed to bleed. The immerſion of the tumour into warm water was repeated, and the application of the poultice, with an increaſed quantity of opium, half a drachm of opium rubbed down in ſix drachms of olive oil, having been mixed with it. I or-

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dered him jalap. pulv. 3ſs. ſapon. gr. x. to be made into pills, and taken at three doſes, until he ſhould be freely purged; but he was adviſed to delay taking them till twelve o'clock, that he might, if poſſible, obtain ſome reſt.

I viſited him again at eight o'clock in the evening. He had been relieved for about two hours after I left him, but his pains then became violent as before. He had an evacuation with much uneaſineſs, after which he took his pills, but they had not operated. The tumour, with regard to ſize, was much the ſame as in the morning: however, the ſuperficial inflammation was leſs, for the ſcrotum looked paler, and began to corrugate. The veſſels were much leſs turgid, but I opened another of them, which did not bleed in a ſtream until I immerſed the part into warm water, when I obtained about as much blood as in the morning, and the veſſel would have given out more, but I checked it, becauſe he ſeemed very faint. A freſh anodyne poultice was applied, and as he complained of much pain in the courſe of the ſpermatic

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cord, a piece of flannel, soaked in laudanum, was laid over the part, and he took 40 drops of it.

On the fourth morning I was happy to find him considerably better. He had passed a good night. The scrotum of the affected side was much corrugated, pale, and the vessels flat; the tumour also was rather less, and not quite so tender to the touch; and he was almost free from fever. As he still complained of pain in the testicle, spermatic cord, and loins, though considerably less than before; and as he had been evidently relieved by the loss of blood, I judged that the repetition of the evacuation would prove further useful. From the affected side of the scrotum I could get only a very few drops of blood, though I opened several vessels; however, on the other side of the rapha finding the veins more prominent, I punctured one of them, and by immersing the part into warm water, it gave out between two, and three ounces, as I judged from the quantity of coagulum found at the bottom of

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the veſſel. The poultice, &c. was applied as before. The opium had produced confuſion, and much thirſt; to relieve which, and to keep his bowels open, he was adviſed to drink freely of a ſolution of cream of tartar.

In the evening I ſaw him again. He had ſeveral large evcuations ſince the uſe of the cream of tartar, and the efforts to evacuate had cauſed a little temporary increaſe of pain. An anodyne draught was ordered him.

I had it not in my power to attend to him again till the morning of the ſixth day, April 29th, when I found him free from fever, but very languid, owing to the pain, evacuations, abſtinence, and confinement, which he had undergone. He had ſtill ſome remains of uneaſineſs in the ſpermatic cord and loins, though the inflammation of the teſticle was pretty well ſubdued, for the tumour was ſubſiding, and he could now bear gentle handling. I recommended him to uſe a more nouriſhing diet, and to drink a

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ſmall quantity of wine; but urged the neceſſity of confinement, and opiates at night, together with a continuance of the local applications. I had not an opportunity of ſeeing him again till the day before I left Barbadoes, May 5th, when I was happy to find him much better. The tumour was free from pain and inflammation, and was reduced to about half the ſize it had attained during the inflammatory ſtage; he had, therefore, laid aſide the uſe of the poultice, and only wore a bag truſs. The ſkin on the anterior part of the affected ſide of the ſcrotum was glued down to the teſtis; a ſufficient proof of the height to which the inflammation had gone, and how nearly it had run into ſuppuration. He was aſtoniſhingly reduced by what he had ſuffered; I therefore recommended the liberal uſe of bark and wine, and cautioned him againſt exerciſe, until the tumour ſhould have nearly ſubſided.

I have lately had an account of this gentleman, by which I learn that there was no appearance of a freſh accumulation of

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fluid, but that the teſticle ſtill remained very much enlarged, as, indeed, might be expected for ſome time after ſo ſevere an inflammation.

Here ends my experience of this operation, and I regret that its ſucceſs did not meet the full extent of my expectations. The event of two of the caſes remains undecided, of the others three ſucceeded, and four failed, under the firſt injection, but of theſe, two, on being again injected, were cured.

It yet remains to be determined which is the moſt effectual operation for a diſeaſe which has been ſo long known. Surgeons to large hoſpitals have had it in their power to ſolve this difficulty by comparative trials, yet at hoſpitals various operations are ſtill performed, and each has its advocate. That ſome of them occaſionally anſwer the purpoſe has been long ſince proved, but to each

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mode it has been objected, either that it is uncertain in its effects, or dangerous from its violence. When we compare the operation by injection with the many others recommended for the radical cure of hydrocele, we are ſtruck with its moſt pleaſing characteriſtic mildneſs. I can ſcarcely believe that there are any who deny the value of ſurgery, but all the world confeſs its terrors; that operation, then, brings with it its ſtrongeſt recommendation, which, whilſt it produces a cure, is moſt diveſted of pain and danger. All the operations for hydrocele at preſent generally received into practice, viz. inciſion, cauſtic, and ſeton, neceſſarily occaſion a painful wound, long confinement, and ſome danger. Injection requires only a ſmall wound, confines the patient but for a ſhort time, can be ſcarcely ſaid to endanger life, and may be performed on thoſe on whom it would be the height of imprudence to venture on any of the other operations. Whilſt poſſeſſing theſe advantages, it is much to be regretted that it is but an uncertain remedy. This uncer-

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tainty appears to reſult from the ſhort time the ſtimulus is applied. In the other operations a foreign body (for even the tunica vaginalis deſtroyed by the cauſtic may be ſo conſidered) is employed to keep up the inflammation neceſſary for the cure, but injection ſtimulates only for a moment. If much inflammation is excited by it, the cure is complete; but if little, ſerum is again effuſed, and a freſh hydrocele is quickly formed. Another cauſe of failure ariſes from the difficulty of proportioning the degree of ſtimulus to the irritability both of the part and conſtitution. An injection which gives no pain in one caſe will occaſion great uneaſineſs in another; and that which is ſcarcely felt at the time of its introduction, will often afterwards excite violent inflammation; whereas that which gives an unexpected degree of pain, will not always produce ſufficient action to effect a cure, of which ſome of the foregoing caſes furniſh ſufficient proofs.

The ſame objection alſo holds to this operation which has been ſo frequently

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urged againſt the ſimple inciſion, viz. the partial adheſions which follow the folded ſtate into which the tunica vaginalis is thrown by the ſudden evacuation of the water.

From the foregoing caſes it appears that no inference, with regard to the ſucceſs of the operation, can be drawn from the ſize of the tumour, as the probability of a radical cure bears no proportion to its ſmallneſs, or does the inflammation appear to increaſe, in its ſeverity, according to the magnitude of the tumour. See caſes 7th and 8th.

When the operation fails, it is ſoon known, for the water does not collect gradually, as after the palliative operation, but is effuſed during the inflammatory ſtage.

In the ſucceſsful caſes the teſtes remained for many weeks larger than natural, or than they were at the time of the operation, except in caſe the 8th, which proceeded in the manner deſcribed by Mr. Earle.

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XII. *An Inquiry concerning the true and ſpurious Cæſarian Operation, in which their Diſtinctions are inſiſted on, principally with a View to form a more accurate Eſtimate of Succeſs; to which are annexed ſome Obſervations on the Cauſe of the great Danger.* By JOHN HAIGHTON, M. D. &c.

WHEN we conſider the univerſal fatality which has, in this country, attended thoſe attempts to ſave patients by this operation, where delivery had been found impracticable in any other way, we are not to wonder if we meet with little ardour of expectation either in the operator, or in thoſe around him. The operation is propoſed partly becauſe it is conſidered as a point of duty, and partly becauſe ſucceſs comes within the limits of poſſibility; and as the medical records of other countries furniſh ſucceſsful inſtances, ſo the caſe which may caſually be depending, naturally leads both

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practitioner and patient to hope that theirs may be of the happy number.

But this appears to be viewing the ſubject only as an affair of calculation, in which our hopes reſt on no rational baſis. Would it not, therefore, be a ſubject worthy the inquiry of the philoſopher to determine whether ſucceſs in one caſe, and failure in others, can be referred either to the mode of operating, to any fixed principle or law in the living human ſubject, or to the ſalutary reſources of nature prevailing over the threatening conſequences of the operation.

The importance of the undertaking will be readily acknowledged by every one who thinks a ſingle moment, either on the difficulty of the ſubject, or on the benefits that may be derived from a ſucceſsful attempt. The exploreme nt of cauſes, even on ſubjects where facts abound, will always challenge the exertions of minds poſſeſſed of ſuperior acumen: the attempt muſt then be peculiarly diſcouraging in a matter like the preſent, where it has been more

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the object of writers to accumulate case upon case, where this operation has been ſucceſsfully performed, than to ſearch even with moderate induſtry into the authenticity of what they related. And even admitting no miſtatement to appear in the event of the caſes, we are ſtill at a loſs to know, from the very compendious ſtatement of facts and circumſtances, to what cauſe we ſhould attribute fatality in ſome, and ſucceſs in others.

The writings of Rouſſet, (who by the way is one of the greateſt advocates for this operation) are marked with a more than common degree of ſterility in this reſpect; indeed very little authentic matter can be gleaned from his work, whether we ſearch for general or particular facts. What opinion can any cautious reader form of a treatiſe in which he is told that one woman had been the ſubject of the Caſarian operation *ſeven* times, ſix of which ſhe of courſe ſurvived? Credulity ſeems to pauſe at ſuch relations. Nor can his doubts be completely removed in the following caſe

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of that work, containing the more modeſt aſſertion of a repetition of this operation *three* times in another woman. Juſtice to Rouſſet, however, requires me to acknowledge that ſuch caſes, even if they were proved fabulous, amount not to any impeachment of his veracity, becauſe he records them on the teſtimony of others (ex auditu fideli), but certainly they may reflect ſomewhat on his credulity, ſince he has thought fit to avail himſelf of them as a prop to his opinions, as well on the expediency, as on the ſafety, of that operation.

But Rouſſet by no means poſſeſſes the excluſive right of recording wonders; he participates this privilege only in common with Roonhuiſen, Thomas Bartholin, Renaud, and others. Roonhuiſen relates that Sonne, a phyſician at Bruges, performed this operation ſeven times on his own wife. Bartholin, when at Paris, knew a woman, the wife of a ſurgeon, who had been the ſubject of this operation five times. And Renaud, on the authority of Dr. Pallaire, of Maurienne in Savoy, relates a caſe of a

woman at Auçois, who had eſcaped the uſual fatality ſix times. As theſe relations repel every attempt at criticiſm, we ſhall reſerve our comments for more favourable opportunities. Such are more likely to be met with in thoſe caſes where the patient has been only *once* the ſubject of the operation: and here it is to be lamented that ſcarcely any have been brought forward to notice, except thoſe which have ended favourably; therefore any attempt to inſtitute a ratio of ſucceſs, founded on calculation, muſt of neceſſity be defeated. The views of writers on this ſubject have been directed rather to collect materials for the defence of, and even eulogy on the operation, than to preſent their readers with a faithful and circumſtantial detail of ſymptoms and appearances. Many of theſe attempts have failed in the intention, ſeeing that they conſiſted of little more than regiſters of what have been conſidered ſucceſsful caſes, in which every thing that could give either credit or intereſt to theſe relations has been omitted. Inſtead, there-

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fore, of ſecuring to themſelves the aſſent of their readers, by firſt impreſſing their minds with conviction, they have choſen the more queſtionable mode of commanding belief by the ocular teſtimony of men frequently not of the medical profeſſion. It has ſometimes fallen to the lot of the clergy to bear teſtimony on theſe occaſions, and to vouch for the authenticity of what their general trains of thinking, and habits of acting, but ill qualify them to judge, or comprehend. The reſpect I bear to their general character as men, as well as to the ſolemnity of their function, ſtrongly inclines me to abſolve them from the imputation of wilfully miſleading; but I would aſk by what teſt any one, not of the medical profeſſion, ſhall decide, when at a ſuppoſed Cæſarian operation, whether the fœtus is contained in the uterus, or only in one of the appendages to that organ. The firſt can alone be properly called the Cæſarian operation, and its conſequences are dangerous in the extreme; the laſt, which has been even by the profeſſion too frequently confounded

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with it, is comparatively an operation of little hazard. And when a medical ſpectator, nay, even the operator himſelf, ſhall err in theſe diſcriminations, I can ſcarcely hope to find an arbiter in an obſerver of a different profeſſion. There is ſomething in a minute and circumſtantial detail of phenomena, and occurrences ariſing during the performance of an operation, which may be conſidered the internal evidences and vouchers of its truth, and which tends to ſtamp a credit on the relation of it beyond what the combined teſtimony of a multitude of witneſſes can effect; and when I either hear or read an extraordinary caſe, unattended by ſuch vouchers, I know not whether to credit or diſbelieve. By this teſt I ſhall beg leave to examine a few caſes which have been long ſince laid before the public, as evidences of the ſucceſs and ſafety of the operation. And firſt thoſe related by Rouſſet, in which he ſays he has had ocular evidence; but what he calls ocular evidence is not being preſent at the operation, and gaining information at its

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ſource, as we ſhould naturally ſuppoſe; but conſiſts in nothing more than examining the cicatrix, noticing the remains of the ſutures where they are perceptible, hearing the woman's account, or the account of ſome one who was preſent, and then he promulgates this as a caſe of Cæſarian operation ſucceſsfully performed. This is the only proof he offers in ſeveral of his caſes; in others he is ſomewhat more circumſtantial.

The following caſe, though probably genuine, is far from being ſatisfactory in regard to internal evidence. The ſubject of it is a woman whom he ſaw in a poor-houſe while labouring under a continued fever, and who told him that ſhe had been the ſubject of this operation about five years before. Her huſband, who was preſent, aſſerted the ſame, and they pointed to the child who had been brought forth in this mode, and whoſe apparent age agreed with their account. Rouſſet next inſpected the ſurface of the abdomen, and found the remains of an inciſion on the left ſide of it,

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agreeably to his expectations. She added that she had not been pregnant since, though her husband and herself were both young.

From the above circumstances considered in assemblage, it is probable that this is a case of the true Cæsarian operation, though the expediency of this operation does not appear in the above narrative, no mention being made of the woman having been ricketty, or the pelvis deformed from any other cause; nor is the obstacle to parturition, by the natural passage, even hinted at. But admitting the expediency of the operation, on what does the proof of its being a true Cæsarian one depend? I should say, that in the present case the proof rested *on the single fact of the child being born alive*, for no one circumstance, except this, has been related that could distinguish it from an extra-uterine case. I believe the instances where the child has been saved in the extra-uterine cases are very few, because the true state of things is seldom ascertained during its life, and the inducement to operate is generally the consequence of some attempt

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which nature has been making to relieve herſelf by forming an abſceſs in the abdomen. How queſtionable, then, is that information which is derived from meaſuring the cicatrix, or numbering the remains of the ſutures.

He relates another caſe which occurred in the year 1556, in which a woman had been in labour four days. His aſſiſtance was deſired, but was unable to attend from indiſpoſition. We ſhould naturally ſuppoſe that he would modeſtly have declined giving an opinion. On the contrary, without having the ſmalleſt opportunity of judging of the expedience, he adviſed the Cæſarian operation, which was performed, and ſhe recovered. The child lived a ſhort time.

It ſeems that Rouſſet was very far from poſſeſſing a faſtidious nicety in the ſelection of his operations; for he does not ſcruple to inform us that this very woman, ſome years after, was delivered of a living child by her own efforts.

In the deſcription of the operation which

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we receive from the ſurgeon (barbarum detonſor) he ſays the inciſion was made in the right ſide, through the abdominal muſcles, peritoneum, and uterus; and from the cicatrix which Rouſſet examined, with his uſual accuracy, it appears that the direction of the inciſion was oblique, beginning from the middle of the rectus muſcle, and extending to the ilium.

It ought to be remarked in the detail of the operation, that the abdominal muſcles, peritonæum, and uterus, were ſaid to be cut through. This many would ſuppoſe was ample evidence in favour of this caſe being the true Cæſarian operation. I willingly admit this caſe to be really what it is ſuppoſed, but I reſt here chiefly on the life of the child for the proof: for the circumſtance of cutting through what was ſuppoſed to be the uterus, without any collateral evidence, is by no means deciſive from an operator who, from the ſtate of anatomical knowledge at the time in which he lived, cannot be ſuppoſed to know the diſtinction

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between an uterine and extra-uterine cafe*.

* Whoever will take the trouble to read the extraordinary cafes publifhed about this time of women carrying a child in utero two, three, four, or more years, (a fact altogether improbable) muft perceive that I have not called in queftion their ability of judging rightly on this matter without fair grounds. Nor can we wonder at this incompetency when it is recollected that it was not known until about the time of De Graaf, (near a century after) that the rudiments of the fœtus were firft formed in the ovaries, that they were conveyed from thefe bodies by the Fallopian tubes to the uterus, where they were perfected.

What juft idea then could any one have either of the ovarian, ventral, or tube cafe? The authenticity of the cafe of the fow-gelder's wife at Siergenhaufen, in Germany, though often quoted, feems to reft on no better evidence than the life of the child; for every thing elfe that could probably fix our wandering conjectures feems to have been overlooked. No fatisfactory reafon appears to evince the propriety of the operation; for in the fequel we are informed that the mother recovered, and brought forth fix living children afterwards by the natural paffage.

The report of the hufband, who was the operator, muft have been the fource of the information which Cafpar Bauhin afterwards publifhed. (See his Appendix to Rouffet's Work.)

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Leſt this laſt obſervation ſhould ſeem to be levelled at every caſe that might have been related at this period, and to carry with it an inſinuation that no dependance could poſſibly be placed on any thing met with in the writings of this time, I think it eſſential to add, that a common degree of attention to the uſual phænomena of labour will completely remove the difficulty in queſtion; for when I read that a caſe occurred to a practitioner, in which, after a ſucceſſion of labour pains, parturition had made little or no ſenſible advances; and on inquiring the cauſe, by examination of the natural paſſages, there was either a very narrow and diſtorted pelvis, or ſome ſufficient impediment in the ſoft parts; the os uteri could be diſtinctly perceived diſpoſed for labour, its progreſſive degrees of dilatation traced, together with the protruſion of the membranes, or a diſtinct perception of ſome part of the head: if, I ſay, in ſuch a caſe the child was extracted by an inciſion into the abdomen, I do not heſitate to acknowledge this a caſe of the true Cæſarian

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operation; for theſe are the internal evidences of authenticity of which I have been ſpeaking, and which, in my mind, would preponderate over the united teſtimony of a multitude of witneſſes, ſuch as I have before deſcribed.

The following caſe is related by Rouſſet as an inſtance of the Cæſarian birth, as he judged from the cicatrix.

A midwife near Fontainbleau, in the year 1542, had been pregnant ten months. As the os uteri ſhewed no diſpoſition to dilate, the operator cut into her left ſide, and extracted a putrid fœtus. In this operation, as in the laſt, the inciſion is ſaid to have been made firſt through the parietes of the abdomen, and afterwards into the uterus. This woman recovered, and had ſome years after, by the natural paſſage, a ſon and daughter, at different births, both alive.

Now I cannot perſuade myſelf that this caſe was truly Cæſarian. The protracted geſtation, the putrid ſtate of the child, together with the abſence of all diſpoſition in the os uteri for labour, argue ſtrongly the

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contrary. Had the child been in utero, nature would have made ſome decided effort for its expulſion at the end of the ninth month, and it is very probable that ſome irregular attempts were in the preſent inſtance made agreeably to a general law, though not noticed in the relation: for in caſes which have afterwards been proved extra-uterine, labour pains have commenced at the uſual period, for a time returned with ſome regularity of interval, afterwards theſe intervals lengthened, and become leſs regular, and finally there has been a ceſſation of them for ſeveral days together. At length, however, nature has made ſome attempt at relief by a preternatural paſſage, as the rectum, or parietes of the abdomen, in the formation of an abſcefs; but the periods at which theſe ultimate efforts commence are extremely indefinite, ſometimes as early as a few weeks, but more frequently after the lapſe of ſome months. In all caſes, however, active life becomes extinguiſhed ſoon after the expiration of nine months, conſequently there

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muſt be a ceſſation of growth: but why the fœtus in ſome caſes ſhall become diſſolved, ſo that the bones ſhall be the only exiſting veſtiges, and from their irritating power ſhall produce an abſceſs; and why, in others, it ſhall, by a proceſs of transformation, ſcarcely retain any traces of its original characters, but become changed into a bony maſs, or earthy concrete, and remain quietly within the body for a ſeries of years, is a queſtionable point in phyſiology, and would admit of a very extenſive diſcuſſion. But to return from this ſeeming digreſſion to a further examination of the caſe under conſideration, I think we may trace an evident reſemblance between it and the uſual extra-uterine caſes at the tenth month from conception; for where nature intended ultimately to relieve herſelf by diſcharging the bones from an abſceſs, ſhe would by this time have proceeded about as far in her attempts as appears in the preſent inſtance; for the putrefaction will probably precede the diſſolution of the bones. But there is yet an argument favouring my opinion of

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this caſe, on which much dependence may be placed; this is the ſtate of the os uteri. Relying on the accuracy of the woman's reckoning, (who, by the way, was a mid-wife,) I feel ſome difficulty in an uterine caſe in admitting the probability of finding this part ſo deſtitute of the characters of labour a month after the uſual time, as is ſtated in the preſent inſtance; but this condition of it is preciſely what might be expected in an extra-uterine conception. This laſt, conſidered with relation to the expediency of the operation, ſeems to have been the determining part, for the ſtate of the pelvis clearly could not indicate it, as her following labours proved; and no other impediment to the progreſs of labour appears to have been even hinted at.

Sufficient as this might appear to a practitioner of that time, to warrant ſuch an operation, I am perſuaded that in the preſent day few could be found hardy enough to undertake it under ſimilar circumſtances; for the determination of a modern practitioner would be regulated by the hope of

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ſaving the mother, the child, or both. Now at this period from conception, the life of the mother is ſeldom in ſuch immediate danger as to authoriſe ſuch an operation, ſo that there can be but little inducement to operate on her account: and with reſpect to the fœtus, the true nature of the caſe is ſeldom ſo much as even ſuſpected while the child is ſuppoſed to be living; therefore the management of theſe caſes is, at the preſent day, generally committed to Nature until ſhe has made ſome obvious attempt at relief, the operator then thinks it proper to ſecond her views.

Now that the ſubject of the diſtinction between an uterine and an extra-uterine caſe, as connected with the operation, is under diſcuſſion, I ſhall beg leave to introduce the relation of a caſe which was, by a reſpectable practitioner in Ireland who operated, conſidered as a true Cæſarian birth, but which, on a minute examination, will appear to be only an extra-uterine conception, probably of the ovarian kind.

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The ſubject of it was a woman about thirty-three years of age, who was already the mother of ſix living children, and having enjoyed a good ſtate of health, was not likely to labour under any deformity in the pelvis. Being now in her ſeventh pregnancy, at her full reckoning, was ſeized with labour pains in the month of Auguſt. Being very luſty, and rather feveriſh, ſhe was let blood. She was left to the care of a female practitioner, but this gentleman viſited her once every day for a week, though without being able to give any aſſiſtance, notwithſtanding her pains were ſtrong and forcing. Two other practitioners of the ſame town viſited her, but with no better ſucceſs. Her labour pains ſeldom remitted, and from the putridity of the fœtus ſome of the ſmall bones of the hands and feet were diſcharged by the vagina. In the month of March following, (ſeven months from the commencement of labour pains) he was deſired to attend her again, at which time ſhe had ſuffered an extreme degree of emaciation. But about three weeks before this a

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ſuppurative proceſs, about three inches above the pubes, had commenced, and the end of one of the ribs had forced its way through. Upon attempting, in a gentle manner, to pull it further out, a profuſe hæmorrhage followed. The patient and her friends inſiſted that he ſhould enlarge this opening, and endeavour to extract the fœtus; and the better to encourage him in this attempt, declared that whatever conſequences might enſue, no blame ſhould be imputed to him. An inciſion, almoſt three inches in length, was made near the linea alba in the direction of the rectus muſcle, but ſo profuſe a hæmorrhage came on, that he thought it prudent to bind up the wound, to prevent immediate fatality. This had a favourable effect on the hæmorrhage, and ſhe reſted tolerably well during the night. The next evening the roller was taken off, and the wound being conſiderably dilated, he had ready acceſs into what he ſuppoſed to be the uterus, and extracted all the remaining bones detached from each other, except thoſe compoſing the ſpine, which

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were yet in a ſtate of connexion. He adds that there had been a ſuppuration of the uterus oppoſite to that part of the abdomen, together with an adheſion of it to the peritoneum. She recovered ſo ſpeedily, that in the ſpace of five weeks ſhe was able to walk three miles to a neighbouring town.

Now, from the uterus being mentioned as the ſeat of the inciſion, it is clear that the operator had perſuaded himſelf that this could be nothing elſe than a true Cæſarian operation; and, indeed, had circumſtances of doubt reſpecting this ariſen in his mind during the operation, the recollection of the diſcharge of the ſmall bones of the hands and feet by the vagina, might have fixed his wavering judgment; for nothing ſeems more natural than to conclude that every thing diſcharged by the vagina originated in the womb. But this concluſion, though ſpecious, is premature; for various are the inſtances which evince the poſſibility (nay demonſtrate the fact,) that the vagina may become the excretory canal to the ovaries, not only through the intervention of the

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tubes and uterus, the natural train, but by immediate adheſion and ulceration of thoſe two parts. Now I more than ſuſpect that the puzzling phenomenon of the diſcharge of ſome of the ſmall bones antecedent to the operation will admit of a more natural ſolution on this principle than on any other. But leſt the mind ſhould yet remain ſuſpended in doubt, conſult the records of this part of our profeſſion, and diſſection will demonſtrate that whenever pregnancy has been protracted ſo much beyond the uſual term, it has been occaſioned by an extra-uterine conception. Such is the irritability of the womb, and ſuch its intimate connexion with the whole animated fabric, that a true uterine caſe, at a much earlier period than the preſent, admits of no middle courſe between delivery and death. Had the propoſed limits of this paper admitted a more extended comment on the laſt caſe, I might have dwelt at ſome length on the obſcurity thrown over it by neglecting to ſtate the reſult of an examination per vagina. This would have comprehended the

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ſtate of the os uteri, the protruſion of the membranes, their burſting, and the preſentation of the child; circumſtances eſſential to the deſcription of its true character. But from a total ſilence on this part, it is fair to ſuppoſe that no ſatisfactory information had been obtained. All the ambiguity, then, has ariſen from this omiſſion.

The following caſe is probably of the true Cæſarian kind, and alſo ſucceſsful.

In the year 1707 Monſieur Ruleau, ſurgeon of Xainties, in a diſſertation on this ſubject, relates that he was called to a woman who had had ſtrong labour pains five days. On examination, ſuch was the extreme narrowneſs of the pelvis at its brim, that he could not introduce even two fingers. He performed the operation as the only eligible alternative, ſcarcely any hæmorrhage enſued, and the patient recovered.

Now the above narrative, though ſhort, comprehends ſufficient to ſhew the expediency and authenticity of the operation, together with its reſult.

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It would be eaſy to accumulate caſes for criticiſm by conſulting different writers; or, to ſave the trouble of extenſive ſearch, the paper of Monſieur Simon, in the firſt volume of the Memoirs of the Academy of Surgery at Paris, will preſent the reader with an extenſive collection of caſes, the probable authenticity of which may be, in ſome degree, judged of by appealing to the criterion I have been endeavouring to eſtabliſh. Nor would this employment be deſtitute of utility in as far as it guards us from miſtaking the reſemblance for the reality, and advances us, at leaſt, one ſtep towards a calculation of the hazard attending the operation.

Were there no mode of diſtinguiſhing between genuine and ſpurious relations of caſes, it would be very difficult to reconcile the reports of the ancients with the experience of the moderns, for the former lead us to a proſpect of ſucceſs highly flattering to our expectations, while the latter depreſs our hopes by aſſociating the operation with probable fatality.

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Again, until our own times, few are the unſucceſsful caſes which have occupied the pages of medical records, they have uſually been withheld from the public eye as monuments of profeſſional fallibility; while the moderns, with ſuperior candour, and with juſter notions of philoſophy, have ſpread out their unſucceſsful endeavours, to invite obſervations, and to afford to poſterity an opportunity of profiting by the reaſonings and reſearches of phyſiological inquirers.

In this, I conceive, reſts the chief difference between the ſucceſſes of the paſt and preſent ages. If we refuſe to acknowledge the juſtice of this explanation, we become reduced to the painful alternative of lamenting the retrograde courſe of chirurgical knowledge, and of admitting that the proper mode of performing the Cæſarian operation ought to be numbered with the arts that are forgotten.

Small as has been the ſucceſs of modern Cæſarian operations, I cannot but perſuade myſelf that it has, at leaſt, equalled that of the ancients when diveſted of exaggeration

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and error. But even this will be conſidered but a cool compliment to modern ſurgery, ſeeing that out of a conſiderable number who have been the ſubjects of it, a very few only have lived to bear teſtimony of its ſucceſs. It would be no unprofitable employment, could it be accompliſhed, to compare the ſmall number of ſucceſsful caſes with the large number of thoſe which have ended leſs fortunately, and thus to inſtitute a ratio: but the difficulty that muſt attend the acquiſition of genuine information would ſoon effectually check our zeal in the purſuit.

I doubt whether the recollection of man can furniſh a ſucceſsful inſtance that has occurred in theſe three kingdoms, (if we except the caſe of Mr. Barlow) although there has been about a dozen operations. It is therefore not without reaſon that ſome reſpectable profeſſional characters have been, and ſtill continue, prejudiced againſt it. But as the poſſibility of ſucceſs may ſerve to vindicate the propoſal, it becomes the buſineſs of medical philoſophy to inveſtigate the

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cauſes on which the extreme danger depends.

Whatever information may be gleaned from the writings of antiquity, neither my inclination, nor leiſure, lead me to collect. We muſt naturally ſuppoſe the reaſonings of thoſe times to conſiſt of ramifications of the prevailing cotemporary theories, but which are now neglected and forgotten.

Our own times furniſh conjectures and opinions on this ſubject, which, if well founded, might ſuggeſt ſome improvement in the manner of conducting the operation. An inquiry, then, into the ſolidity of theſe explanations can by no means be regarded as an extraneous conſideration.

One very reſpectable phyſiologiſt has aſſerted that the miſchief and danger attending the Cæſarian operation are to be referred to the admiſſion of air into the cavity of the abdomen; for he ſays, "if the bowels are expoſed for a number of minutes to the cold air, dreadful pain and inflammation ſucceed, which generally prove fatal; and on examining the abdomen after death he

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found effuſion of bloody ſerum and adheſion of the bowels to each other."

Now if the fact be well eſtabliſhed, it naturally ſuggeſts conſiderable attention to the excluſion of cold air from the abdominal cavity, as well by the expeditious manner in which the operation is performed, as by the perfect contact of the edges of the wound afterwards. Moreover, if the admiſſion of air be injurious from its coldneſs, nothing can be more eaſy than to raiſe the temperature of the air in the room where the operation is intended to be performed.

But the advocates for this opinion will probably attribute leſs to the temperature of the air than to the air itſelf. They may contend, agreeably to modern theory, as reſting on a knowledge of the conſtitution of the atmoſphere, that the pure or oxygenated part of the ſurrounding air, when applied either to an internal cavity, or an expoſed ſurface, always excites pain and irritation, and generally the moſt violent inflammation. Provided the premiſes are true, the inference muſt be obviouſly this,

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viz. that if it were poſſible to exclude the air completely, the Cæſarian operation would be nearly diveſted of its dangerous conſequences.

But before this idea be purſued to any greater extent, ſtrict inquiry ought to be made into the truth of the principle on which it reſts. Some credit is due to Mr. Hunter for having pointed out the futility of this operation, by his obſervations on the phenomena and conſequences of wounds penetrating the different cavities into which the air may ſometimes be admitted. He ſtates, that if ſuch a wound can be made to unite ſpeedily, no inflammation of the cavity enſues, it has not yet had time to experience the conſciouſneſs of its imperfection, and therefore what he called the *ſtimulus of imperfection*, is not given: but if from any cauſe ſuch union be not effected, then the conſciouſneſs of imperfection exiſts: and its effect will be an inflammation of the whole internal ſurface of the cavity.

I have not introduced this opinion with a view to any comment on the principle of

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conſciouſneſs, as that muſt neceſſarily lead me into devious paths, and betray me into the various meanderings of theory; nor is it neceſſary, as the reader will naturally exerciſe his own judgment here.

The miſchievous effect of air in cavities has, of late, found an opponent in Mr. John Bell. He not only doubts the entrance of air into cavities accidentally opened by reaſon of the conſtant preſſure exerted on the contained parts from the muſcular parietes; but even queſtions very much whether the mere preſence of air, ſuppoſing it to be admitted, can produce thoſe unfavourable ſymptoms uſually aſcribed to it.

That penetrating wounds into the abdominal cavity are, in general, unfavourable for the admiſſion of air, I have been long diſpoſed to admit, and my doubts have always reſted, as his have done, on the conſtant endeavour in the abdominal muſcles to protrude their contents rather than to invite the entrance of any thing. But while I am acknowledging the generality of this

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law; I cannot but admit that ſome exceptions may occur, and I think the ſtate of theſe parts, during the performance of the Cæſarian operation, will rather favour the introduction of air than oppoſe it. Whoever conſiders the ſudden reduction of bulk which the uterus muſt undergo from the extraction of its contents, cannot but perceive that by thus making room for the air, it will have a tendency to invite its entrance. I am aware, too, that in reply to this it may be alledged, that the above reaſoning can be admitted only in as far as it can be firſt granted that the parietes of the abdomen remain in the ſame poſition after delivery as before: but then it will be ſaid that this is altogether repugnant to fact; for as ſoon as the diſtending cauſe is removed, the abdominal muſcles adapt themſelves to the remaining bulk, and by their preſſure, as before, ſtill exclude the external air. Specious as this may appear to the theoriſt, it will not be found to be realized by the practitioner; for every accoucheur knows that after delivery the abdominal parietes remain

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ſome time in a very looſe and flaccid ſtate, which condition would allow them to act but very feebly in repelling any attempt to the entrace of air.

From theſe conſiderations it appears to me very probable, that during the Cæſarian operation air may be admitted into the cavity. But even allowing this, it by no means follows as a neceſſary conſequence, that the violent ſymptoms ſucceeding the operation are referrible to this cauſe. Before ſuch concluſion can poſſibly be admitted, it ought to be well aſcertained by the moſt ſimple experiments, whether the mere preſence of air in a cavity can produce inflammation.

This is a queſtion which the uſual modes of inquiry have always appeared to me but ill calculated to anſwer, becauſe the obſervations have been made under the moſt complicated circumſtances; as, for inſtance, an inciſion ſome inches in length has been made into the abdomen of an animal, and ſometimes an inflammation of that cavity has ſupervened. Now are we here to affirm

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that the air alone produced these ill consequences, without imputing any thing to the violent injury committed on the part? I am more than persuaded that those who affirm this, ascribe too much to the influence of air. Nor are my doubts on this subject completely removed, on reading that a thrust from a red hot poker into the pericardium was followed by an inflammation of the cavity. In such a case I should conceive the accident alone a very sufficient cause of the mischief that succeeded: but observations made on complicated facts must ever lead to diversity of conclusion.

It appears to have been admitted, though on very questionable grounds, that the Cæsarian operation derives its danger from the admission of air into the abdominal cavity; and on this hypothetical view of the subject it has really been proposed to perform that operation during the immersion of the patient in warm water.

A late respectable medical character considered this so feasible a project, that at his particular request I opened the abdomen of

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different animals to a conſiderable extent, cloſing them again during the immerſion. As ſoon as the abdomen was raiſed above the ſurface of the water, an adheſive compoſition was poured on the cut edges, by which and a bandage the external air was completely excluded. No ſymptom indicating internal inflammation ſupervened, and perfect health was ſoon reſtored. On the elapſe of ſome weeks, theſe animals were ſubjected to anatomical examination, which ſhewed that an adheſion of the omentum to the cut edges of the peritoneum had made that cavity complete.

Theſe facts at firſt made a favourable impreſſion on his mind, and appeared ſomewhat to diſpoſe him to admit, that if the Cæſarian operation were performed in the ſame medium, the project would not be altogether viſionary. But in order to form a right eſtimate of this, I determined to repeat theſe experiments in the air. All other circumſtances being ſimilar, the event of which agreeing ſo preciſely with the former, ſerved to regulate his expectations.

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As far as the ſimple queſtion concerning the effect of air in circumſcribed cavities is concerned, I readily admit that theſe experiments do not offer a very ſatisfactory ſolution; nor do I conſider any experiments free from objection in which the introduction of the air is complicated with a penetrating wound. This induced me to deviſe a mode of inquiry not encumbered with this difficulty; and recollecting that in many brutes the cavities of the abdomen and tunica vaginalis teſtis communicates with each other during life (a circumſtance which, with a few exceptions, in the human ſubject is confined to early infancy), I took the advantage of this anatomical fact, and from a ſmall puncture made at the bottom of the ſcrotum, penetrating the tunica vaginalis, ſeveral cubic inches of atmoſpherical air were conveyed by a ſyringe into the peritoneal cavity of a dog. From different trials that were made in this manner, I do not heſitate to conclude that atmoſpherical air penetrating into cavities is perfectly harmleſs, and has no influence over

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the conſequences of the Cæſarian operation. It ſeems like going out of the way to ſearch for cauſes when very obvious ones are at hand.

Surely no greater cauſes need be looked for than the large inciſion made into the uterus, the (ſometimes) ſudden diſcharge of blood in conſiderable quantity, a great part of which often eſcapes into the cavity of the abdomen, where it ſoon loſes the properties it poſſeſſed while in its veſſels, and conſequently produces the ſymptoms of an exceſſive irritation. No one, I think, will preſume to ſay that wounds of the uterus are not to be ranked among the mortal ones; and the inſtances where that organ, or even the vagina, has been lacerated by an injudicious degree of force, amply prove the ſufficiency of the cauſe to the production of the effect, and which effect uſually takes place before the ſymptoms of an inflamed cavity have come on. It is to be regretted that this part of the danger is never likely to be averted by any human

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contrivance: but that part of it which depends on the extravaſation of blood into the abdomen may ſometimes be moderated by a gentle preſſure of the abdominal parietes on the anterior portion of the uterus.

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XIII. *A Case of Imperforated Hymen, attended with uncommon Circumstances. By* JOHN SHERWEN, M. D. *Enfield, and Member of the Corporation of Surgeons. Communicated by Dr.* HAIGHTON.

ON the 31st day of December, 1794, Eliz. Estwick, aged thirty-eight, who had been fourteen years married, was in extreme pain, having for three or four days had no evacuation of urine but by means of the catheter. Her abdomen was so much enlarged as to have the appearance of her being six or seven months advanced in pregnancy. She had very strong bearing down pains, with tumour in perinæo, and apparently a solid substance in the vagina, affording so lively a representation of the head of a child during the exertions of labour, that it might for a moment have deceived the most skilful practitioner in midwifery. This woman, for more than two years after her marriage,

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had been ſuppoſed by her neighbours to be pregnant; and, what is rather extraordinary, had been ſimple enough to believe ſo herſelf. But the impoſſibility of this was immediately apparent; for the entrance into the vagina was abſolutely ſhut up by a very rigid and completely imperforated hymen. Being aſked if ſhe had ever menſtruated, ſhe very readily anſwered in the affirmative; which, for a ſhort time, inclined me to believe that the hymen might formerly have had ſome trifling aperture; and that this from inflammation, or external violence, or from ſome other cauſe, might have coaleſced: but upon further inquiry it was ſoon diſcovered that partly from ignorance, and partly from a deſire of being thought like other women, ſhe had magnified into a menſtrual evacuation, ſome caſual ſlight appearances of blood which had been probably excited by the ineffectual attempts at connubial intercourſe.

Having aſcertained the true ſtate of the caſe, I plunged a lancet into the tumour in the vagina, which was withdrawn with-

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out the discharge of any fluid, except a little florid arterial blood, which the hymen itself, being very thick, fleshy, and vascular, afforded; but by enlarging the aperture so as to admit the forefinger, and by continuing the incision upward as high as the safety of the uretha would admit, and downward as low as the perinæum, I had the satisfaction to perceive a forcible extrusion of thickened menses beginning slowly to take place, the colour and consistence of which were that of the thickest treacle; or rather, it might be compared to a quantity of the unguentum picis forcibly squeezed through an aperture of the same dimensions, and hanging down like a rope twelve or fourteen inches from the vagina before a portion of it broke off. There was, however, a stream of fresh crimson arterial blood trickling very fast down the surface of this black menstrual substance. When I compare the thickened menses to treacle, I ought to say treacle in which a large proportion of some dirty grey earthy powder had been mixed. After five or six pounds

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of this ſubſtance, which was free from any particular bad ſmell, were evacuated, the further diſcharge becoming tedious, and requiring voluntary exertion on the part of the patient, who was now ſomewhat faint, I put her into bed, directing a large piece of ſoft ſponge to be introduced into the opening, when the diſcharge ceaſed. She was likewiſe told to remove it occaſionally; to waſh, and to introduce it again. I found it neceſſary to give theſe directions, becauſe in a caſe of the ſame kind which occurred in the early part of my practice, rather more than twenty years ſince, in a young girl of fifteen or ſixteen years of age, who was regardleſs of the conſequences, I could never prevail upon her either to ſuffer an enlargement of the inciſion to be made after the firſt evacuation of menſes, nor to admit of any proper means being taken to keep the lips of the wound ſeparate, which of courſe contracted ſo much as to admit only of menſtruation; a circumſtance which probably may account for her remaining in a ſtate of celibacy. But the caſe was very

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different in the preſent inſtance; for my patient, although extremely ignorant, was extremely anxious to prevent the contraction of the aperture; and I have the ſatisfaction to find has ſtrictly followed my directions.

This caſe affords a very ſtriking inſtance of the wonderful power with which the animal ſyſtem is endowed, of accommodating itſelf to new and very difficult ſituations, producing deviation from the natural order of things in the vital economy. Are we to ſuppoſe that this woman began to menſtruate at the uſual age, and that ſhe had continued to menſtruate internally for nearly twenty years? Perhaps ſuch a ſuppoſition cannot, without difficulty, be admitted; and from the following circumſtance many of the readers of this paper may be inclined to deduct a conſiderable number of years. I found, upon inquiry, that my late partner, Mr. Prichard, had made uſe of bleeding in the foot, and other remedies, for ſuppoſed obſtruction of the menſes in this patient's caſe, when ſhe was a young woman under twenty years of age.

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But nothing perfectly ſatisfactory can be deduced from this, becauſe at that time bleeding in the foot might very probably have been made uſe of in the moſt palpable caſe of chloroſis, in which, I preſume, it is well known to moſt modern practitioners that it can do nothing but miſchief. More may, perhaps, be gathered from the patient's own account. She perfectly remembers that ſhe had, at that time, a very pale countenance, and all the other deſcriptive marks of chloroſis.

It is therefore probable that very little internal menſtruation took place before the age of twenty-ſix or twenty-ſeven, when ſhe married; but it is evident that a copious internal flow muſt then have come on, for the abdomen began to enlarge ſoon after this period, and ſhe became ſo much indiſpoſed as to be generally thought in a ſtate of pregnancy. It may be preſumed that the embraces of a vigorous huſband, making repeated, though ineffectual efforts, to conquer the obſtruction, muſt have rouſed and ſtimulated the genital ſyſtem, and

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brought on a determination to the uterine veſſels: and, although we may be inclined to deduct the firſt nine years of menſtruation, there will ſtill remain fourteen for the accumulation which we are certain took place; and this, it muſt be acknowledged, is a very long time for the patient to carry about with her ſuch a load of infirmity without experiencing ſuppreſſion of ſtool and urine, which at laſt produced a diſcovery of the true ſtate of her caſe. I am perſuaded that the period which I have allotted for the commencement of internal menſtruation will be generally admitted.

There is no other way of accounting for the great length of time that the patient was enabled to exiſt under ſuch an oppreſſion than by ſuppoſing that the thinneſt part of the menſes muſt have been abſorbed, and an earthy powder gradually accumulated. But it is difficult to conceive how this proceſs could have continued ſo long without obſtruction of ſtool or urine, or both taking place. Poſſibly after a certain quantity had been accumulated, and

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the uterus, as well as the vagina, had been much diſtended thereby, the diſpoſition or aptitude for the menſtrual ſecretion might ceaſe, an unnatural ſtate of the uterus taking place might be incompatible with the formation of menſes.

I know not whether this reaſoning will be admitted, but this is certain, that during the whole period of twenty years, although ſhe had ſometimes difficulty in diſcharging urine, ſhe never experienced a complete ſuppreſſion till the three or four days preceding the inciſion. And when that became neceſſary, although the woman had a ſickly, and, in ſome reſpects, a ſallow countenance, there were evidently conſiderable remains of the crimſon cheek, denoting a healthy good conſtitution if this unnatural obſtruction had not exiſted.

On the day after the inciſion I found there had been a diſcharge of nearly the ſame quantity of thickened menſes as that already noticed. The tumefaction of the abdomen was already conſiderably leſſened; the urinary and inteſtinal evacuations were free from

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difficulty or obſtruction, and the patient experienced a degree of eaſe and comfort to which ſhe had been for many years an entire ſtranger.

From the anſwers which I received to a number of queſtions improper to be particularized in this place, I had great reaſon to hope that the caſe might have terminated in the production of a living ſupplement.

Eleven weeks have elapſed ſince the diviſion of the hymen, and there has not yet been any return of menſtruation. It may, however, be proper to obſerve, that the menſtrual diſcharge conſequent upon this operation continued about ten days, and that it was ſucceeded for the ſame length of time by leucorrhæa, which gradually ceaſed, and has not yet returned.

JOHN SHERWEN.

Enfield, March 18, 1795.

P. S. All my hopes of ſeeing the above caſe followed by parturition, were fruſtrated by the death of the patient, which hap-

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pened on the 31ſt of May 1796. As I did not know of her death at the time, I had not the ſatisfaction to examine the ſtate of the uterus, nor have been able to inform myſelf of the particular circumſtances attending her laſt illneſs, but have no reaſon to ſuppoſe them connected with her former ſufferings.

J. S

April 5, 1798.

END OF THE FIRST PART.

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D. Blane delin.

W. Skelton Sculp.

Explanation of the Case of Tic Douloureux.

A . the Suborbitar foramen.

B . the Suborbitar branches of the fifth pair of Nerves.

C . a probe placed at the part where the Nerves should be divided.

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Fig. 1.

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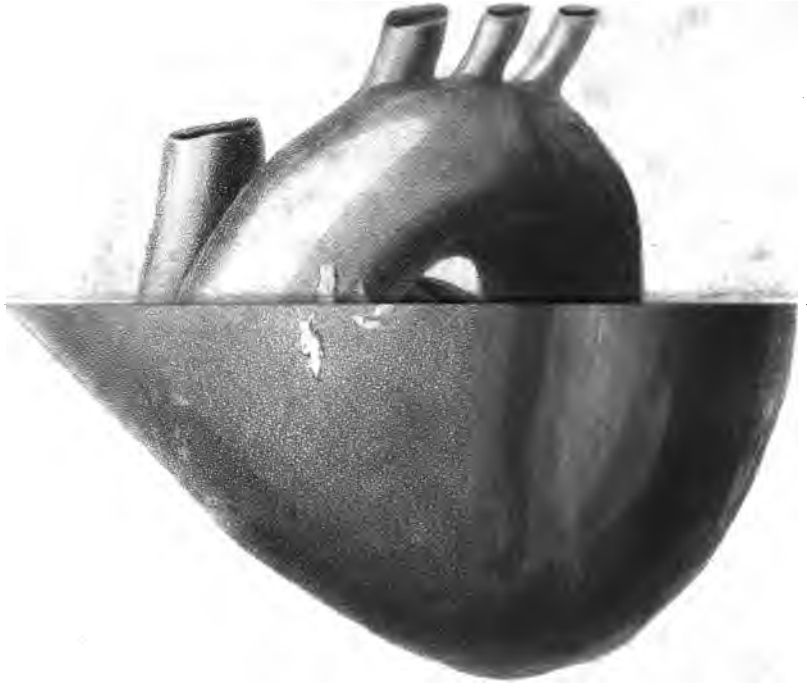

Drawn by W. Creswell.

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Fig. 1. Fig. 3. Fig. 2.

Creswell del. Byrnie Sculp.

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